

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
RICHMOND DIVISION**

THE TRUSTEES OF COLUMBIA
UNIVERSITY IN THE CITY OF NEW
YORK,

Plaintiff,

v.

SYMANTEC CORPORATION,

Defendant.

Civil Action No. 3:13-cv-808

**DECLARATION OF JARED W. NEWTON IN SUPPORT OF DEFENDANT
SYMANTEC CORPORATION'S MOTION TO TRANSFER VENUE TO THE
CENTRAL DISTRICT OF CALIFORNIA PURSUANT TO 28 U.S.C. § 1404(a)**

I, Jared W. Newton, declare as follows:

1. I am an attorney with the law firm of Quinn Emanuel Urquhart & Sullivan. I am licensed to practice law in the Commonwealth of Virginia and admitted to the United States District Court for the Eastern District of Virginia. Unless otherwise stated, I have personal knowledge of the facts set forth in this declaration, and if called as a witness I could and would testify competently to the same.

2. Attached hereto as Exhibit 1 is a printout of the webpage <http://www.cs.ucla.edu/~eeskin/eeskin-cv.pdf>, which I generated on January 12, 2014. Exhibit 1 indicates that Eleazar Eskin is currently a professor at the University of California, Los Angeles.

3. Attached hereto as Exhibit 2 is a printout of the webpage <http://www.linkedin.com/pub/matthew-schultz/1/aa7/89>, which I generated on January 13, 2014. The Exhibit 2 indicates that Matthew Shultz is currently a technology principal at Forrester Research in Philadelphia, Pennsylvania.

4. Attached hereto as Exhibit 3 are printouts of the webpages <http://www.cs.sunysb.edu/~ezk/> and <http://www.cs.sunysb.edu/~ezk/contact.txt>, which I generated on January 12, 2014. Exhibit 3 indicates that Erez Zadok is currently an associate professor at Stony Brook University in Stony Brook, New York.

5. Attached hereto as Exhibit 4 is a printout of the webpage <http://www.lw.com/people/manasi-bhattacharyya>, which I generated on January 12, 2014. Exhibit 4 indicates that Manasi Bhattacharyya is currently an attorney at the law firm Latham & Watkins in Chicago, Illinois.

6. Attached hereto as Exhibit 5 is a printout of the webpage <http://www.linkedin.com/pub/frank-apap/4/783/809>, which I generated on January 12, 2014. Exhibit 5 indicates that Frank Apap is current a Senior Director at Pegasystems in the greater New York area.

7. Attached hereto as Exhibit 6 is a printout of the webpage <http://www.linkedin.com/pub/andrew-honig/50/397/822>, which I generated on January 12, 2014. Exhibit 6 indicates that Andrew Honig is currently a Software Security Engineer at Google in Seattle, Washington.

8. Attached hereto as Exhibit 7 is a printout of the webpage <http://www.cs.columbia.edu/~sh553/>, which I generated on January 12, 2014. Exhibit 7 indicates that Shlomo Hershkop is currently a professor at Columbia University in New York, New York.

9. Attached hereto as Exhibit 8 are printouts of the webpages <http://www.cs.columbia.edu/~angelos/> and <http://www.cs.columbia.edu/~angelos/cv.html>, which I generated on January 12, 2014. Exhibit 8 indicates that Angelos Keromytis is currently an associate professor at Columbia University in New York, New York, and a Program Director at the National Science Foundation in Arlington, Virginia. Exhibit 8 also indicates that Angelos Keromytis began working at the National Science Foundation in July 2013.

10. Attached hereto as Exhibit 9 is a printout of the webpage <http://people.csail.mit.edu/stelios>, which I generated on January 12, 2014. Exhibit 9 indicates that Stelios Sidiroglou-Douskos is currently a research scientist at the Massachusetts Institute of Technology in Cambridge, Massachusetts.

11. Attached hereto as Exhibit 10 is a printout of the webpage <http://www.linkedin.com/in/calvinchu>, which I generated on January 12, 2014. Exhibit 10 indicates that Calvin Chu is currently a Managing Director for the R/GA Accelerator Powered by Techstars in New York, New York.

12. Attached hereto as Exhibit 11 is a printout of the webpage <http://www.linkedin.com/pub/anil-chakravarthy/0/62/36a>, which I generated on January 12, 2014. Exhibit 11 indicates that

Anil Chakravarthy is currently an Executive VP and Chief Product Officer at Informatica in the San Francisco Bay area.

13. Attached hereto as Exhibit 12 is a printout of the webpage <http://www.cacd.uscourts.gov/jurisdiction>, which I generated on January 12, 2014. Exhibit 12 indicates that Los Angeles County lies in the Western Division of the Central District of California.

I declare under penalty of perjury that the foregoing is true and correct. Executed January 14, 2014, at Washington, DC.


By:  _____
Jared W. Newton

Exhibit 1

Eleazar Eskin

Department of Computer Science
University of California, Los Angeles
3532-J Boelter Hall
Los Angeles, CA 90095-1596

eeskin@cs.ucla.edu
<http://www.cs.ucla.edu/~eeskin>

EDUCATION Ph.D., Computer Science, **Columbia University**, October 2002.
M.S., Computer Science, **Columbia University**, May 2000.
B.S., Computer Science (with Honors), **University of Chicago**, May 1997.
B.A., Economics (with Honors), **University of Chicago**, May 1997.
B.S., Mathematics, **University of Chicago**, May 1997.

WORK EXPERIENCE

Associate Professor: Department of Computer Science. Department of Human Genetics.
University of California, Los Angeles. July 2009 - present.
Assistant Professor: Department of Computer Science. Department of Human Genetics.
University of California, Los Angeles. October 2006 - June 2009.
Assistant Professor in Residence: Department of Computer Science and Engineering.
University of California, San Diego. July 2003 - October 2006.
Post Doctoral Researcher: School of Computer Science and Engineering. *The Hebrew University.* October 2002 - July 2003.

TEACHING EXPERIENCE

Instructor: Computational Genetics.
University of California, Los Angeles, Spring 2007, Spring 2008, Spring 2009, Spring 2010, Spring 2011, Spring 2012.
Instructor: Introduction to Bioinformatics.
University of California, Los Angeles, Fall 2010.
Instructor: Current Topics in Bioinformatics.
University of California, Los Angeles, Winter 2008, Fall 2008, Winter 2010, Fall 2011, Fall 2012.
Instructor: Research Training in Bioinformatics (undergraduate).
University of California, San Diego, Winter 2005, Spring 2005.
Instructor: Introduction to Computer Programming in Java.
Columbia University, Spring 1999.
Instructor: Introduction to Computers.
Barnard College Pre-College Program, Summers 1998, 1999, 2000.
Teaching Assistant: Columbia University, 1997-1998.
Machine Learning, Speech Processing.
Teaching Assistant: University of Chicago, 1994-1997.
Junior Tutor for Calculus.

JOURNAL EDITORIAL SERVICE

American Journal of Human Genetics, Associate Editor, 2012-2015.

CONFERENCE PROGRAM COMMITTEE AND REVIEWING

Conference Steering Committee: *RECOMB Satellite Workshop on Regulatory Genomics*, 2004-2007 (**Chair**).

Conference Program Committee: *The Thirteenth Workshop on Algorithms in Bioinformatics (WABI-2013)*, 2013.

The Twenty First Annual International Conference on Intelligent Systems in Molecular Biology (ISMB-2013), 2013 (**Area Chair**).

Population Quantitative Genetics Conference, 2012.

Second Annual RECOMB Satellite Meeting on Sequencing (RECOMB-seq), 2012 (**Chair**).

The Sixteenth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2012), 2012.

The Eleventh Workshop on Algorithms in Bioinformatics (WABI-2011), 2011.

The Nineteenth Annual International Conference on Intelligent Systems in Molecular Biology (ISMB-2011), 2011 (**Area Chair**).

First Annual RECOMB Satellite Workshop on Massively Parallel Sequencing (RECOMB-SEQ-2011), 2011.

The Fifteenth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2011), 2011.

The 2011 Pacific Symposium on Biocomputing (PSB-2011), 2011 (**Session Organizing Committee**).

NIPS 2010 workshop on Machine Learning in Computational Biology (MLCB-2010), 2010.

The Seventh Annual RECOMB Satellite Workshop on Regulatory Genomics, 2010.

The Eighteenth Annual International Conference on Intelligent Systems in Molecular Biology (ISMB-2010), 2010 (**Area Chair**).

The Fourteenth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2010), 2010.

NIPS 2009 workshop on Machine Learning in Computational Biology, 2009.

The Sixth Annual RECOMB Satellite Workshop on Regulatory Genomics, 2009.

The Ninth Workshop on Algorithms in Bioinformatics (WABI-2009), 2009.

The Seventeenth Annual International Conference on Intelligent Systems in Molecular Biology (ISMB-2009), 2009 (**Area Chair**).

The Thirteenth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2009), 2009.

Advances in Neural Information Processing Systems 21 (NIPS-2008), 2008 (**Area Chair**).

The Fifth Annual RECOMB Satellite Workshop on Regulatory Genomics, 2008.

The Eighth Workshop on Algorithms in Bioinformatics (WABI-2008), 2008.

The Twelfth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2008), 2008.

NIPS 2007 New Problems and Methods in Computational Biology Workshop, 2007.

The Fourth Annual RECOMB Satellite Workshop on Regulatory Genomics, 2007.

The Fifteenth Annual International Conference on Intelligent Systems in Molecular Biology (ISMB-2007), 2007.

The Twenty Fourth International Conference on Machine Learning (ICML-2007), 2007.

The Eleventh Annual International Conference on Research in Computational Molecular Biology (RECOMB-2007), 2007.

NIPS 2006 New Problems and Methods in Computational Biology Workshop, 2006.

The Twenty Third International Conference on Machine Learning (ICML-2006), 2006.

The Third Annual RECOMB Satellite Workshop on Regulatory Genomics, 2006.

NIPS 2005 New Problems and Methods in Computational Biology Workshop, 2005.
The Second Annual RECOMB Satellite Workshop on Regulatory Genomics, 2005 (**Chair**).
The Twenty Second International Conference on Machine Learning (ICML-2005), 2005.
The Ninth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2005), 2005.
NIPS 2004 New Problems and Methods in Computational Biology Workshop, 2004.
The First Annual RECOMB Satellite Workshop on Regulatory Genomics, 2004 (**Chair**).
The Twenty First International Conference on Machine Learning (ICML-2004), 2004.
The Twentieth International Conference on Machine Learning (ICML-2003), 2003.
Workshop on Data Mining for Computer Security (DMSEC-2004), 2004.
Workshop on Data Mining for Computer Security (DMSEC-2003), 2003.
Conference Organizing Committee: *Mathematical and Computational Approaches in High-Throughput Genomics*, Institute of Pure and Applied Mathematics, University of California, Los Angeles, 2011.
RECOMB Satellite Workshop on Regulatory Genomics, 2004-2006 (**Chair**).
The Tenth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2006), 2006 (**Tenth Year Anniversary Committee Chair**).
Journal Referee: *Annals of Applied Statistics*, 2012. *Gastroenterology*, 2012. *Communications of the ACM*, 2012. *Statistical Applications in Genetics and Molecular Biology*, 2011. *Genome Biology*, 2011. *Proceedings of the National Academy of Sciences*, 2007. *Nature Genetics*, 2007, 2008, 2010, 2011, 2012. *Nucleic Acids Research*, 2007. *Molecular Systems Biology*, 2007, 2008. *Genome Research*, 2004, 2005, 2007, 2008, 2011, 2012, 2013. *PLoS Genetics*, 2008, 2009, 2010, 2012. *Genetics*, 2009, 2010, 2011. *Genetic Epidemiology*, 2010, 2011. *Nature Methods*, 2009, 2011. *PLoS Computational Biology*, 2005, 2007, 2008, 2010, 2011, 2012, 2013. *American Journal of Human Genetics*, 2005, 2006, 2007, 2010, 2011, 2012, 2013. *Genes, Brain and Behavior*, 2011. *IEEE Transactions on Computational Biology and Bioinformatics*, 2005, 2006, 2007, 2008. *Journal of the American Statistical Association*, 2010. *Pharmacogenomics*, 2008. *Journal of Neuroscience Methods*, 2007. *Journal of Molecular Genetics*, 2007. *IEEE Transactions on Knowledge and Data Engineering*, 2005. *BMC Bioinformatics*, 2004, 2005, 2007, 2008, 2009. *BMC Medical Genetics*, 2008. *Human Molecular Genetics*, 2005, 2006. *Bioinformatics*, 2003, 2004, 2005, 2006, 2007, 2008. *Nature Molecular Systems Biology*, 2006. *Journal of Computational Biology*, 2004, 2005, 2007, 2009, 2010, 2011. *Journal of Bioinformatics and Computational Biology*, 2003, 2007, 2008. *IEEE Transactions on Systems, Man and Cybernetics*, 2002, 2003.
Conference Reviewer: *Advances in Neural Information Processing Systems 23 (NIPS-2010)*, 2010.
Advances in Neural Information Processing Systems 22 (NIPS-2009), 2009.
The 2013 Pacific Symposium on Biocomputing (PSB-2012), 2012.
The 2012 Pacific Symposium on Biocomputing (PSB-2012), 2012.
The 2007 Pacific Symposium on Biocomputing (PSB-2007), 2007.
Advances in Neural Information Processing Systems 20 (NIPS-2007), 2007.
The ACM-SIAM Symposium on Discrete Algorithms (SODA-2007), 2007.
The Tenth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2006), 2006.
The Thirteenth Annual International Conference on Intelligent Systems in Molecular Biology (ISMB-2005), 2005.
The Eighth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2004), 2004.

The 2004 Pacific Symposium on Biocomputing (PSB-2004), 2004.
Advances in Neural Information Processing Systems 16 (NIPS-2003), 2003.
The 2003 European Conference on Computational Biology (ECCB-2003), 2003.
The Ninth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2003), 2003.
The Nineteenth Conference on Uncertainty in Artificial Intelligence (UAI-2003), 2003.
The Seventh Annual International Conference on Research in Computational Molecular Biology (RECOMB-2003), 2003.
The Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2002), 2002.
The 2002 ACM SIGMOD International Conference on Management of Data (SIGMOD-2002), 2002.
The Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD-2000), 2000.

PUBLICATIONS

Refereed Journal Papers

1. Oron Navon, Jae Hoon Sul, Buhm Han, Lucia Conde, Paige Bracci, Jacques Riby, Christine Skibola, Eleazar Eskin, Eran Halperin. "Rare Variant Association Testing under Low-Coverage Sequencing." *Genetics* (In Press), 2013.
2. George D Leikauf, Vincent J Concel, Kiflai Bein, Pengyuan Liu, Annerose Berndt, Timothy M Martin, Koustav Ganguly, An-Soo Jang, Kelly A Brant, Richard A Dopico Jr, Swapna Upadhyay, Clinton L Cario, YP Peter Di, Louis J Vuga, Emrah Kostem, Eleazar Eskin, Ming You, Naftali Kaminski, Daniel R Prows, Daren L Knoell, James P Fabisiak. "Functional Genomic Assessment of Phosgene-induced Acute Lung Injury in Mice." *American Journal of Respiratory Cell and Molecular Biology* (In Press), 2013.
3. Jae Hoon Sul, Buhm Han, Chun Ye, Ted Choi, Eleazar Eskin. "Effectively identifying and characterizing eQTLs from multiple tissues using a meta-analytic approach." *PLoS Genetics* (In Press), 2013.
4. Jae Hoon Sul, Eleazar Eskin. "Mixed models can correct for population structure for genomic regions under selection." *Nature Reviews Genetics* (In Press), 2013.
5. Atila van Nas, Richard C. Davis, Brian Bennett, Luz Orozco, Calvin Pan, Christoph D. Rau, Eleazar Eskin, Aldons J. Lusis. "Genome-wide association mapping of blood cell traits in mice." **Mammalian Genome** (In Press), 2013.
6. Sandrine Lagarrigue, Farhad Hormozdiari, Lisa J. Martin, Frederic Lecerf, Yehudit Hasin, Christoph Rau, Raffi Hagopian, Yu Xiao, Jun Yan, Thomas A. Drake, Anatole Ghazalpour, Eleazar Eskin, and Aldons J. Lusis. "An analysis of exonic RNA editing in mouse liver and adipose." **Genetics** (In Press), 2013.
7. Brian W. Parks, Elizabeth Nam, Elin Org, Emrah Kostem, Frode Norheim, Simon T. Hui, Calvin Pan, Mete Civelek, Christoph D. Rau, Brian J. Bennett, Margarete Mehrabian, Luke K. Ursell, Aiqing He, Lawrence W. Castellani, Bradley Zinker, Mark Kirby, Thomas A. Drake, Christian A. Drevon, Rob Knight, Peter Gargalovic, Todd Kirchgesner, Eleazar Eskin, Aldons J. Lusis. "Genetic Control of Obesity and

Gut Microbiota Composition in Response to High-Fat, High-Sucrose Diet in Mice.” **Cell Metabolism** **17(1):141-52**, 2013.

8. Michael B. Miller, Saonli Basu, Julie Cunningham, Eleazar Eskin, Steven M Malone, William S Oetting, Nicholas Schork, Jae-Hoon Sul, William G Iacono, Matt McGue. “The Minnesota center for twin and family research genome-wide association study.” **Twin Research and Human Genetics** **15(6):767-774**, 2012.
9. Jurjen J. Luykx, Steven C. Bakker, Wouter F. Visser, Nanda Verhoeven-Duif, Jacobine E. Buizer, Jonas den Heijer, Marco P.M. Boks, Jae Hoon Sul, Eleazar Eskin, Rita Cantor, Eric Strengman, Joseph DeYoung, Teus H. Kappen, Esther Pariama, Eric P.A. van Dongen, Paul Borgdorff, Peter Bruins, Jacob Vorstman, Tom J de Koning, Ren S. Kahn, Roel A. Ophoff. “Genome-Wide Association Study of NMDA-Receptor Co-Agonists in Human Cerebrospinal Fluid and Plasma Identification of Common Variants in Metabolic and Transporter Genes.” **Molecular Psychiatry** (In Press), 2013.
10. Gina Calabrese, Brian J. Bennett, Luz Orozco, Hyun M. Kang, Eleazar Eskin, Carlos Dombret, Olivier De Backer, Aldons J. Lusis, Charles R. Farber. “Systems Genetic Analysis of Osteoblast-Lineage Cells.” **PLoS Genetics** (In Press), 2013.
11. Nathaniel Parrish, Benjamin Sudakov, Eleazar Eskin. “Genome reassembly with high-throughput sequencing data.” **BMC Genomics Special Issue of the Proceedings of the Asian Pacific Bioinformatics Conference (APBC-2012)** (In Press), 2013.
12. Dan He, Buhm Han, Eleazar Eskin. “Optimal Algorithm for Haplotype Phasing with Imputation using Sequencing Data.” **Journal of Computational Biology** (In Press), 2013.
13. Zhanyong Wang, Farhad Hormozdiari, Wen-Yun Yang, Eran Halperin, Eleazar Eskin. “CNVeM: Copy Number Variation detection Using Uncertainty of Read Mapping.” **Journal of Computational Biology** (In Press), 2013.
14. Dan He, Eleazar Eskin. “Hap-seqX: Expedite Algorithm for Haplotype Phasing with Imputation using Sequence Data.” **Gene** (In Press) *Special Issue of the Proceedings of the Genome Informatics Workshop (GIW-2012)* Tainan, Taiwan: December 12th-14th, 2012.
15. Jonathan Flint, Eleazar Eskin. “Genome-wide association studies in mice.” **Nature Reviews Genetics**. **13(11):807-17**, 2012.
16. Micha Hersch, Bastian Peter, Hyun Min Kang, Fanny Schpfer, Hugues Abriel, Thierry Pedrazzini, Eleazar Eskin, Jacques S Beckmann, Sven Bergmann, and Fabienne Maurer. “Mapping Genetic Variants Associated with Beta-Adrenergic Responses in Inbred Mice.” **PLoS One**. **7.7: e41032**, 2012.
17. Anatole Ghazalpour, Christoph D. Rau, Charles R. Farber, Brian J. Bennett, Luz D. Orozco, Atila van Nas, Calvin Pan, Hooman Allayee, Simon W. Beaven, Mete Civelek, Richard C. Davis, Thomas A. Drake, Rick A. Friedman, Nick Furlotte, Simon T. Hui, J. David Jentsch, Emrah Kostem, Hyun Min Kang, Eun Yong Kang, Jong Wha Joo, Vyacheslav A. Korshunov, Rick E. Laughlin, Lisa J. Martin, Jeffrey D. Ohmen, Brian W. Parks, Matteo Pellegrini, Karen Reue, Desmond J. Smith, Sotirios Tetradis, Jessica Wang, Yibin Wang, James N. Weiss, Todd Kirchgesner, Peter S. Gargalovic, Eleazar Eskin, Aldons J. Lusis, and Rene C. LeBoeuf. “Hybrid Mouse Diversity Panel: A panel of inbred mouse strains suitable for analysis of complex genetic traits” **Mammalian Genome**. **23(9-10):680-92.**, 2012.

18. Brian J. Bennett, Luz Orozco, Emrah Kostem, Ayca Erbilgin, Marchien Dallinga, Hongxiu Qi, Xuping Wang, Eleazar Eskin, and Aldons J. Lusis. "High-Resolution Association Mapping of Atherosclerosis Loci in Mice" **Arteriosclerosis, Thrombosis, and Vascular Biology** Aug;32(8):1790-8, 2012.
19. Ryan S. Friesse, Chun Ye, Nitish R. Mahapatra, Fangwen Rao, Philip S. Napolitan, Jill Whelan, Geert W. Schmid-Schnbein, Eleazar Eskin, and Daniel T. O'Connor. "Integrated computational and experimental analysis of the neuroendocrine transcriptome in genetic hypertension identifies novel control points for the metabolic syndrome" **Circulation**. **5(4):430-40**, 2012.
20. James N Weiss, Alain Karma, W Robb MacLellan, Mario Deng, Christoph Rau, Colin M Rees, Eleazar Eskin, Stephen Horvath, Zhilin Qu, Yibin Wang, and Aldons Jake Lusis. " "Good Enough Solutions" and the Genetics of Complex Diseases." **Circulation**. **111(4):493-504**, 2012.
21. Jeremiah M. Scharf, Dongmei Yu, Carol A. Mathews, Benjamin M. Neale, S. Evelyn Stewart, Jesen A Fagerness, Patrick Evans, Eric Gamazon , Christopher K. Edlund , Susan Service , Anna Tikhomirov, Lisa Osiecki, Cornelia Illmann, Anna Pluzhnikov, Anuar Konkashbaev , Lea K Davis, Buhm Han., Jacquelyn Crane, Priya Moorjani , Andrew T. Crenshaw, Melissa A. Parkin, Victor I. Reus, Thomas L. Lowe, Martha Rangel-Lugo, Sylvain Chouinard, Yves Dion, Simon Girard, Danielle C Cath, Jan H Smit, Robert A. King, Thomas Fernandez , James F. Leckman, Kenneth K. Kidd, Judith R. Kidd, Andrew J. Pakstis, Matthew State, Luis Diego Herrera, Roxana Romero, Eduardo Fournier, Paul Sandor, Cathy L Barr, Nam Phan, Varda Gross-Tsur, Fortu Benarroch, Yehuda Pollak, Cathy L. Budman, Ruth D. Bruun, Gerald Erenberg, Allan L Naarden, Paul C Lee, Nicholas Weiss, Barbara Kremeyer, Gabriel Bedoya Berro, Desmond Campbell, Julio C. Cardona Silgado, William Cornejo Ochoa, Sandra C. Mesa Restrepo, Heike Muller, Ana V. Valencia Duarte, Gholson J Lyon, Mark Leppert, Jubel Morgan, Robert Weiss, Marco A. Grados, Kelley Anderson, Sarah Davarya, Harvey Singer, John WalkupJoseph Jankovic, Jay A. Tischfield., Gary A. Heiman., Donald L. Gilbert, Pieter J. Hoekstra, Mary M. Robertson, Roger Kurlan, Chunyu Liu, J. Raphael Gibbs and Andrew Singleton for the North American Brain Expression Consortium, John Hardy for the UK Human Brain Expression Database, Eric Strengman, Roel Ophoff, Michael Wagner, Rainald Moessner, Daniel B. Mirel, Danielle Posthuma, Chiara SabattiEleazar Eskin, David V. Conti, James A. Knowles, Andres Ruiz-Linares, Guy A. Rouleau, Shaun Purcell, Peter Heutink, Ben A. Oostra, William McMahon, Nelson Freimer, Nancy J. Cox, David L. Pauls. "Genome-wide association study of Tourette Syndrome." **Molecular Psychiatry** (In Press), 2012.
22. Jennifer Listgarten, Christoph Lippert, Eleazar Eskin, David Heckerman. "Improved Power and Calibration for Genome-Wide Association Studies using Linear Mixed Models." **Nature Methods**. **9(6):525-6**, 2012.
23. Nicholas A. Furlotte, Eun Yong Kang, Atila Van Nas, Charles R. Farber, Aldons J. Lusis, and Eleazar Eskin. "Increasing association mapping power and resolution in mouse genetic studies through the use of meta-analysis for structured populations." **Genetics**. **191(3):959-67**, 2012.
24. Nicholas Furlotte, Eleazar Eskin, Susana Eyheramendy. "Genome-wide association mapping with longitudinal data." **Genetic Epidemiology**. **36(5):463-71**, 2012.
25. Wen-Yun Yang, John Novembre, Eleazar Eskin, and Eran Halperin. "A model based

approach for analysis of spatial structure in genetic data” **Nature Genetics**. **44(6):725-31**, 2012.

26. Gregory Darnell, Dat Duong, Buhm Han, Eleazar Eskin. “Incorporating Prior Information into Association Studies.” **Bioinformatics**. **28(12):i147-53**, *Special Issue of the Proceedings of the Nineteenth International Conference on Intelligent Systems in Molecular Biology (ISMB-2012)* Long Beach, CA: July 15th-17th, 2012.
27. Buhm Han, Eleazar Eskin. “Interpreting Meta-Analyses of Genome-wide Association Studies” **PLoS Genetics**. Mar;8(3):e1002555, 2012.
28. Thomas M. Keane, Leo Goodstadt, Petr Danecek, Michael A. White, Kim Wong, Binnaz Yalcin, Andreas Heger, Avigail Agam, Guy Slater, Martin Goodson, Nicholas A. Furlotte, Eleazar Eskin, Christoffer Nellker, Helen Whitley, James Cleak, Deborah Janowitz, Polinka Hernandez-Pliego, Andrew Edwards, T. Grant Belgard, Peter L. Oliver, Rebecca E. McIntyre, Amarjit Bhomra, Jrme Nicod, Xiangchao Gan, Wei Yuan, Louise van der Weyden, Charles A. Steward, Sendu Bala, Jim Stalker, Richard Mott, Richard Durbin, Ian J. Jackson, Anne Czechanski, Jos Afonso Guerra-Assuno, Leah Rae Donahue, Laura G. Reinholdt, Bret A. Payseur, Chris P. Ponting, Ewan Birney, Jonathan Flint, David J. Adams. “Mouse genomic variation and its effect on phenotypes and gene regulation.” **Nature** **477: 289-294**, 2011.
29. Anatole Ghazalpour, Brian Bennett, Vladislav A Petyuk, Luz Orozco, Raffi Hagopian, Imran N Mungrue, Charles R Farber, Janet Sinsheimer, Hyun M Kang, Nicholas Furlotte, Christopher C Park, Ping-Zi Wen, Heather Brewer, Karl Weitz, David G Camp, Calvin Pan, Roumyana Yordanova, Isaac Neuhaus, Charles Tilford, Nathan Siemers, Peter Gargalovic, Eleazar Eskin, Todd Kirchgessner, Desmond J Smith, Richard D Smith, and Aldons J Lusi. “Comparative Analysis of Proteome and Transcriptome Variation in Mouse.” **PLoS Genetics**. **7.6: e1001393**, 2011.
30. Jae Hoon Sul, Buhm Han and Eleazar Eskin. “Increasing Power of Groupwise Association Test with Likelihood Ratio Test.” **Journal of Computational Biology** Nov;18(11):1611-24, 2011.
31. Nathaniel Parrish, Farhad Hormozdiari, Eleazar Eskin. “Assembly of non-unique insertion content using next-generation sequencing.” **BMC Bioinformatics** **12 Suppl 6:S3**, *Special Issue Proceedings of the First Annual RECOMB Satellite Workshop on Massively Parallel Sequencing*. Vancouver, BC, Canada: March 26th-27th, 2011.
32. Dan He, Noah Zaitlen, Bogdan Pasaniuc, Eleazar Eskin, Eran Halperin. “Genotyping common and rare variation using overlapping pool sequencing.” **BMC Bioinformatics**. **12 Suppl 6:S2**, *Special Issue Proceedings of the First Annual RECOMB Satellite Workshop on Massively Parallel Sequencing*. Vancouver, BC, Canada: March 26th-27th, 2011.
33. Buhm Han, Eleazar Eskin. “Random-Effects Model Aimed at Discovering Associations in Meta-Analysis of Genome-wide Association Studies.” **American Journal of Human Genetics**. **88(5):586-98**, 2011.
34. Nicholas A. Furlotte, Hyun Min Kang, Chun Ye and Eleazar Eskin. “Mixed Model Coexpression (MMC): calculating gene coexpression while accounting for expression heterogeneity.” **Bioinformatics**. **27(13):i288-i294** *Special Issue of the Proceedings of the Nineteenth International Conference on Intelligent Systems in Molecular Biology (ISMB-2011)* Vienna, Austria: July 16th-19th, 2011.

35. Dan He, Farhad Hormozdiari, Nicholas Furlotte, and Eleazar Eskin. "Efficient Algorithms for Tandem Copy Number Variation Reconstruction in Repeat-Rich Regions." **Bioinformatics**. **27(11):1513-20**, 2011.
36. Charles R Farber, Brian J Bennett, Luz Orozco, Wei Zou, Ana Lira, Emrah Kostem, Hyun Min Kang, Nicholas Furlotte, Ani Berberyan, Anatole Ghazalpour, Jaijam Suwanwela, Thomas A Drake, Eleazar Eskin, Q Tian Wang, Steven L Teitelbaum, and Aldons J Lusis. "Mouse Genome-Wide Association and Systems Genetics Identify Asxl2 As a Regulator of Bone Mineral Density and Osteoclastogenesis." **PLoS Genetics** **7(4): e1002038**, 2011.
37. Christopher C Park, Greg D Gale, Simone deJong, Anatole Ghazalpour, Brian Bennett, Charles R Farber, Peter Langfelder, Andy Lin, Arshad H Khan, Eleazar Eskin, Steve Horvath, Aldons J Lusis, Roel A Ophoff, Desmond J Smith. "Gene networks associated with conditional fear in mice identified using a systems genetics approach." **BMC Systems Biology**. **5:43**, 2011.
38. Emrah Kostem, Jose A. Lozano, Eleazar Eskin. "Increasing Power of Genome-wide Association Studies by Collecting Additional SNPs." **Genetics**. **188(2):449-60**, 2011.
39. Daria Van Tyne, Daniel J. Park, Stephen F. Schaffner, Daniel E. Neafsey, Elaine Angelino, Joseph F. Cortese, Kayla G. Barnes, David M. Rosen, Amanda K. Lukens, Rachel F. Daniels, Danny A. Milner, Jr, Charles A. Johnson, Ilya Shlyakhter, Sharon R. Grossman, Justin S. Becker, Daniel Yamins, Elinor K. Karlsson, Daouda Ndiaye, Ousmane Sarr, Souleymane Mboup, Christian Happi, Nicholas A. Furlotte, Eleazar Eskin, Hyun Min Kang, Daniel L. Hartl, Bruce W. Birren, Roger C. Wiegand, Eric S. Lander, Dyann F. Wirth, Sarah K. Volkman, Pardis C. Sabeti. "Identification and functional validation of the novel malarial resistance locus PF10_0355 in *Plasmodium falciparum*." **PLoS Genetics**. **7(4):e1001383**, 2011.
40. Jae Hoon Sul, Buhm Han, Dan He, Eleazar Eskin. "An optimal weighted aggregated association test for identification of rare variants involved in common diseases." **Genetics**. **188(1):181-8**, 2011.
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135. Manasi Bhattacharyya, Matthew G. Schultz, Eleazar Eskin, Shlomo HersHKop, and Salvatore J. Stolfo. "MET: An Experimental System for Malicious Email Tracking." *In Proceedings of the 2002 New Security Paradigms Workshop (NSPW-2002)*. 3-10. Virginia Beach, VA: September 23rd-26th, 2002.
136. Leonid Portnoy, Eleazar Eskin and Salvatore J. Stolfo. "Intrusion Detection with Unlabeled Data using Clustering." *In Proceedings of ACM CCS Workshop on Data Mining Applied to Security (DMSA-2001)*. Philadelphia, PA: November 8, 2001.

137. Eleazar Eskin, Matthew Miller, Zhi-Da Zhong, George Yi, Wei-Ang Lee, and Sal Stolfo. "Adaptive Model Generation for Intrusion Detection." *In Proceedings of the 2000 ACM CCS Workshop on Intrusion Detection and Prevention (WIDS-2000)*. Athens, Greece: November 1, 2000.
138. Eugene Agichtein, Eleazar Eskin and Luis Gravano. "Combining Strategies for Extracting Relations from Text Collections." *In Proceedings of 2000 ACM SIGMOD Workshop on Research Issues in Data Mining and Knowledge Discovery (DMKD-2000)*. 86-95. Dallas. TX: May 14, 2000.
139. Eleazar Eskin and Matthew Bogosian. "Classifying Text Documents using Modular Categories and Linguistically Motivated Indicators". *In Proceedings of the AAAI-1998 Workshop on Machine Learning for Text Classification (MLTC-98)*. Madison, WI: July 26-30, 1998.

Invited Papers

140. Can Alkan, Emidio Capriotti, Eleazar Eskin, Fereydoun Hormozdiari, Maricel G. Kann. "PERSONAL GENOMICS - Session Introduction." Pacific Symposium in Biocomputing. 2011:229-30.
141. Buhm Han, Eleazar Eskin. "Multiple Testing in Genetic Epidemiology." *Encyclopedia of Life Sciences*. (In Press), 2010.
142. Sarah J. Aerni, Eleazar Eskin. "10 Years of the International Conference on Research in Computational Molecular Biology (RECOMB)." *In Proceedings of the Tenth Annual Conference on Research in Computational Biology (RECOMB 2006)*. 546-562. Venice, Italy: April 2nd-5th, 2006.
143. Christina Leslie, Rui Kuang and Eleazar Eskin. "Inexact Matching String Kernels for Protein Classification." *Kernel Methods in Computational Biology*. Bernhard Schoelkopf, Koji Tsuda and Jean-Phillip Vert, ed. MIT Press. 95-112. 2004.
144. Bernhard Schölkopf, Jason Weston, Eleazar Eskin, Christina Leslie and William Stafford Noble. "A Kernel Approach for Learning from Almost Orthogonal Patterns." *Principles of Data Mining and Knowledge Discovery*, Springer LNCS 243, 2002.
145. Eleazar Eskin, Andrew Arnold, Michael Prerau, Leonid Portnoy and Salvatore Stolfo. "A Geometric Framework for Unsupervised Anomaly Detection: Detecting Intrusions in Unlabeled Data." *Data Mining for Security Applications*. Kluwer, 2002.
146. Andrew Honig, Andrew Howard, Eleazar Eskin, and Salvatore Stolfo. "Adaptive Model Generation: An Architecture for the Deployment of Data Mining-based Intrusion Detection Systems." *Data Mining for Security Applications*. Kluwer, 2002.
147. Salvatore J. Stolfo, Wenke Lee, Philip K. Chan, Wei Fan, and Eleazar Eskin. "Data Mining-based Intrusion Detection: An Overview of the Columbia IDS Project". **ACM SIGMOD RECORD 30(4):5-14**, December 2001.

DISSERTATION

Title: Sparse Sequence Modeling with Applications to Computational Biology and Intrusion Detection

Summary: Sequence models have been studied for some time in different contexts including language parsing and analysis, genomics, and recently in computer security in the area

of intrusion detection. Many of these sequences can be characterized as "sparse", that is only a fraction of the elements of the sequence have meaningful value. The thesis presents a new efficient framework for approaching sparse sequence modeling problems. The thesis presents techniques using this framework to address three computational problems: classification or transduction, outlier detection, and signal finding. These techniques are applied to protein family classification, regulatory pattern discovery in DNA sequences, and detection of intrusions in audit streams.

Advisor: Salvatore J. Stolfo.

HONORS AND AWARDS

Alfred P. Sloan Foundation Research Fellowship February 2009.

Okawa Foundation Research Grant August 2008.

William J. von Liebig Center for Entrepreneurism and Technology Advancement Award: University of California, San Diego (UCSD). January 2005.

Paul Charles Michaelman Memorial Departmental Service Award: Columbia University Computer Science Department. May 2002.

Best Student Paper Award: USENIX Technical Symposium. FREENIX Track. June 2001.

All-Conference 2nd Team: New York Division. Collegiate Water Polo Association. Fall 2001.

DEPARTMENTAL/UNIVERSITY SERVICE

University Committees: UCLA Hellman Fellows Program Selection Committee, 2012-2013

UCLA Physical Sciences, Life Sciences & Engineering Research Informatics Strategic Planning Committee. 2012-present.

UCLA Bioinformatics Inter-Departmental Ph.D. Program Steering Committee. 2007-present.

UCLA Burroughs Wellcome Fund Inter-school Training Program in Metabolic Diseases. Program Steering Committee. 2009-present.

UCLA Biosciences Initiative Computational Biology Search Committee. 2010-2011.

Undergraduate/Masters Bioinformatics Research Program Coordinator: Founded and served in position to encourage undergraduate and masters students to participate in bioinformatics research groups. 2004-2006.

<http://www.cs.ucsd.edu/~eeskin/projects/>

Departmental Committees: Computer Science Department Recruiting Committee 2010-2011.

Computer Science Department Academic Policy Committee 2009-2010.

Computer Science Department Publicity Committee 2007-2009.

Computer Science Undergraduate Committee 2004-2006.

Bioinformatics Undergraduate Committee 2004-2006.

Research Project Liaison: Instituted and served in position to encourage undergraduate and masters students to participate in departmental research groups. 1998-2002.

Graduate School Advisory Committee: Served as departmental representative to student government for Ph.D. students within the Graduate School of Arts and Sciences (GSAS). 1998-2002.

CURRENT STUDENTS SUPERVISED

Ph.D. Students Supervised:

Nicholas Furlotte UCLA Computer Science Ph.D. Program. 2008-.

Eun Yong Kang UCLA Computer Science Ph.D. Program. 2008-.

Emrah Kostem UCLA Computer Science Ph.D. Program. 2007-.

Jae-Hoon Sul UCLA Computer Science Ph.D. Program. 2008-.

Zhanyong Wang UCLA Computer Science Ph.D. Program. 2009-.

Farhad Hormozdiari UCLA Computer Science Ph.D. Program. 2010-.

Wen-Yun Yang UCLA Computer Science Ph.D. Program. 2010-.

Jong Wha (Joanne) Joo UCLA Bioinformatics Ph.D. Program. 2011-.

PREVIOUS STUDENTS SUPERVISED

Ph.D. Theses Supervised:

Hyun Min Kang UCSD Computer Science and Engineering Ph.D. Program. 2004-2009. Now faculty at University of Michigan.

Sean O'Rourke UCSD Computer Science and Engineering Ph.D. Program. 2004-2009.

Noah Zaitlen UCSD Bioinformatics Ph.D. Program. 2004-2009. Now faculty at University of California, San Francisco.

Buhm Han UCSD Computer Science and Engineering Ph.D. Program. 2005-2009. Now Post-Doctoral Fellow at Harvard.

Chun (Jimmie) Ye UCSD Bioinformatics Ph.D. Program. 2004-2009. Now Post-Doctoral Fellow at Harvard.

Dan He UCLA Computer Science Ph.D. Program. 2008-2012. Now researcher at IBM Research.

UCLA Masters Student Theses:

Nathan Parrish UCLA Masters Program. 2010-2012. Now a Ph.D. student at MIT.

UCSD Undergraduate Student Theses:

Erik Corona. UCSD B.S. CSE Bioinformatics '07. Undergraduate Thesis, "Identification of Deletion Polymorphisms using Haplotypes." Thesis work published at RECOMB-2007. Graduated Ph.D. program at Stanford.

Robin Friedman. UCSD B.S. CSE Bioinformatics '05. Undergraduate Thesis, "Discrete profile alignment via constrained information bottleneck." Thesis work published at NIPS-2004. Winner of Honorable Mention from Computer Research Association national Undergraduate Research Award. Graduated Ph.D. program at MIT.

UCSD Undergraduate/Masters Bioinformatics Research Program: 2004-2006. Supervised many students in context of undergraduate bioinformatics research program.

Columbia University Students Supervised:

Intrusion Detection Systems Project: Spring 2000-Spring 2002. Organized large project on Intrusion Detection Systems. Typically around 30 students are registered for course credit to perform research on the project. Students range from sophomores in college to masters students and have various levels experience and ability. Designed and instituted a management structure where students are broken up into sub-project teams. Students benefitted with research experience and course credit. Many students successfully completed an undergraduate or masters thesis.

Columbia University Undergraduate and Masters Theses Supervised:

Andrew Arnold. Columbia University B.A. '03. Undergraduate Thesis. "Using One-Class SVM for Computer Forensics". Thesis work published in DMSA-2002. Current Ph.D. student at CMU.

Frank Apap. Columbia University B.A. '02. Undergraduate Thesis. "Registry Anomaly

Detection”. Thesis work published in RAID-2002. Winner of Honorable Mention from Computer Research Association national Undergraduate Research Award.

Andrew Honig. Columbia University B.A. '02. Undergraduate Thesis. “Adaptive Model Generation”. Thesis work published in DMSA-2002. Winner of Honorable Mention from Computer Research Association national Undergraduate Research Award. Winner of Departmental Undergraduate Research Award.

Andrew Howard. Columbia University B.A. '02. Undergraduate Thesis. “Adaptive Model Generation”. Thesis work published in DMSA-2002. Current Ph.D. student at Columbia University.

Michael Prerau. Columbia University B.A. '02. Undergraduate Thesis. “Unsupervised Anomaly Detection using K-Nearest Neighbor”. Thesis work published in DMSA-2002. Current Ph.D. student at Boston College.

Manasi Bhattacharyya. Columbia University B.A. '01, M.S. '02. Masters Thesis. “Malicious Email Tracking”. Thesis work published in NSPW-2002. Winner of Best Student Paper Award at USENIX-FREENIX 2001.

Matthew Schultz. Columbia University B.A. '01. Undergraduate Thesis. “Data Mining Methods for Detection of New Malicious Executables”. Thesis work published in IEEE S&P-2001. Winner of Best Student Paper Award at USENIX-FREENIX 2001. Winner of Departmental Undergraduate Research Award.

Leonid Portnoy. Columbia University B.A. '00. Undergraduate Thesis. “Intrusion detection with unlabeled data using clustering”. Thesis work published in DMSA-2001.

INVITED TALKS AND CONFERENCE PRESENTATIONS

“Spatial Structure in Genetic Data” *UCLA Bioinformatics Retreat*. February 7th, 2013.

“Known and Unknown Confounding in Genetic Studies” *Honk Kong University*, January 29th, 2013.

“Allele Specific Expression Mapping” *American Society of Human Genetics*. November 7th, 2012.

“Correcting for Population Structure using Mixed Models” *Short Course on Systems Genetics, Jackson Laboratory, Bar Harbor, Maine*. November 2nd, 2012.

“Known and Unknown Confounding in Genetic Studies” *Penn Bioinformatics Forum, University of Pennsylvania*, October 10th, 2012.

“Spatial Structure in Genetic Data” *Mathematical Biology Seminar, Univeristy of California, Berkeley*. September 12th, 2012.

“Known and Unknown Confounding in Genetic Studies” *2012 Joint Statistical Meetings*, July 31st, 2012.

“Incorporating Prior Information into Association Studies” *Intelligent Systems in Molecular Biology*. July 15th, 2012. “From GWAS to Personal Genomes: The Fundamentals of Analysis of Genetic Variation” *ISBM Tutorial*, July 14th, 2012. “Spatial Structure in Genetic Data” *Haifa University*. March 25th, 2012.

“Allele Specific Expression Mapping” *Safra Distinguished Speaker, Tel Aviv University*. March 25th, 2012.

“Identifying expression quantitative trait loci using allele specific expression” *Neurogenetics Affinity Group Seminar, University of California, Los Angeles*. March 1st, 2012.

“Identifying expression quantitative trait loci using allele specific expression” *Genome Sciences Seminar Series, University of Virginia*. February 27th, 2012.

“Allele Specific Expression Mapping” *Human Genetics Seminar Series, University of*

Michigan, Ann Arbor, MI. February 6th, 2012.

“Computational challenges in genome-wide association studies” *Bioinformatics Program, University of California, Los Angeles.* February 3rd, 2012.

“The computational challenges of personal genomes” *European Union-United States Frontiers of Engineering, National Academy of Engineering, University of California, Irvine.* November 4th, 2011. “Computational Genetics Tutorial” *Institute for Pure and Applied Mathematics, University of California, Los Angeles.* September 16th, 2011. “Allele Specific Expression Mapping” *Wellcome Trust Centre for Human Genetics, Oxford, UK.* September 5th, 2011.

“Computational Challenges in Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Meeting with Zhejiang University School of Medicine, University of California, Los Angeles.* August 29th, 2011.

“Known and Unknown Confounding in Genetic Studies” *Keynote Talk for Machine Learning in System Biology Workshop, Intelligent Systems in Molecular Biology, Vienna, Austria,* July 20th, 2011.

“Efficient algorithms for tandem copy number variation reconstruction in repeat-rich regions” *HiTSeq 2011: Conference on High Throughput Sequencing Analysis and Algorithms Special Interest Group of ISMB 2011.* Vienna, Austria, July 16, 2011.

“Personalized Genomics and Medicine” *UCLA / PKU Joint Research Institute Mini-Symposium, Beijing, China.* April 25th, 2011.

“Simulations and Replications to verify GWAS experiments” *Systems Biology Verification,* March 24th, 2011.

“Personalized Genomics and Medicine” *2011 UCLA Engineering Tech Forum.* March 1st, 2011.

“Statistical Methods for Association Studies with Rare Variants” *School of Public Health Seminar, Harvard.* February 8th, 2011.

“Computational challenges in genome-wide association studies” *Bioinformatics Program, University of California, Los Angeles.* February 3rd, 2011.

“Computational challenges in genome-wide association studies” *UCLA-Institute of Psychiatry Conference, University of California, Los Angeles.* January 31st, 2011.

“Computational challenges in genome-wide association studies” *IBM Research, Tel Aviv.* January 23rd, 2011.

“Challenges in Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains” *The Institute of Evolution, Haifa University.* January 19th, 2011.

“Computational challenges in genome-wide association studies” *Computer Science Department Seminar, Tel Aviv University.* January 16th, 2011.

“Challenges in Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains” *Genetics Seminar, The Hebrew University, Jerusalem, Israel.* January 12th, 2011.

“Computational Challenges in Combining Genome-Wide Association Studies” *The Successes, Challenges and Prospects for Next Generation GWAS analyses for Complex Diseases Workshop, Edinburgh, UK.* October 15th, 2010.

“Correcting for Population Structure using Mixed Models” *Short Course on Systems Genetics, Jackson Laboratory, Bar Harbor, Maine.* September 21st, 2010.

“Accounting for sample structure in Genome-Wide Association Studies” *International Bioinformatics and Systems Biology Workshop, Kyoto University.* July 29th, 2010.

“Accounting for sample structure in Genome-Wide Association Studies” *Computational Biology Seminar, Hebrew University.* June 29th, 2010.

“Leveraging Linkage Disequilibrium in Genome-Wide Association Studies”. *Computational Biology Seminar, Brown University.* March 3rd, 2010.

“Computational Challenges in Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Bioinformatics Program, University of California, Los Angeles*. February 18th, 2010.

“Leveraging joint test status distribution for an optimal significance testing”. *The Fifth Annual Information Theory and Applications Workshop (ITA-2010)*. February 5th, 2010.

“Leveraging joint test status distribution for an optimal significance testing”. *P. Universidad Catlica de Chile, Santiago, Chile*. December 16th, 2009.

“Leveraging joint test status distribution for an optimal significance testing”. *NIPS 2009 Machine Learning in Computational Biology Workshop (MLCB-2009)*. December 11th, 2009.

“Leveraging Linkage Disequilibrium Structure in Association Studies”. *10th International Symposium on Genetic Epidemiology, Seoul, Korea*. November 11th, 2009.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Tsinghua University, Beijing, China*. November 6th, 2009.

“Multiple testing in genome-wide association studies”. *The Fourth Annual Information Theory and Applications Workshop (ITA-2009)*. February 13th, 2009.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Bioinformatics Program, University of California, Los Angeles*. February 2nd, 2009.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Bioinformatics Program, University of California, San Diego*. January 22nd, 2009.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *University of California, Riverside*. January 12th, 2009.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Biostatistics and Medical Informatics, University of Wisconsin, Madison*. November 7th, 2008.

“Increasing Power in Association Studies by using Linkage Disequilibrium Structure and Molecular Function as Prior Information”. *University of the Basque Country, San Sebastian*. September 24th, 2008.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *CardioMet Symposium, Lausanne, Switzerland*. September 19th, 2008.

“Increasing Power in Association Studies by using Linkage Disequilibrium Structure and Molecular Function as Prior Information”. *DIMACS Workshop on Computational Issues in Genetic Epidemiology, Rutgers University*. August 22nd, 2008.

“Computational Challenges in Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Southern California Bioinformatics Institute, California State University, Los Angeles*. August 1st, 2008.

“Computational Challenges in Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Bioinformatics Program Retreat, University of California, Los Angeles*. May 23rd, 2008.

“Computational Challenges in Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Computer Science Department Seminar, University of California, Los Angeles*. May 22nd, 2008.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *Computational Life Sciences Seminar, Emory University*. April 11th, 2008.

“Increasing Power in Association Studies by using Linkage Disequilibrium Structure and Molecular Function as Prior Information”. *The Twelfth Annual International Conference on Research in Computational Molecular Biology (RECOMB-2008)*. April 2nd, 2008.

"A Sequence-Based Variation Map of 8.27 Million SNPs in Inbred Mouse Strains". *Keystone Symposium on Complex Traits: Biologic and Therapeutic Insights*. March 1st, 2008.
"Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains". *Computational Biology Seminar, University of California, Los Angeles*. February 20th, 2008.

"Computational and Statistical Challenges in Design and Analysis of Association Studies". *The Fourth Annual Information Theory and Applications Workshop (ITA-2009)*. February 1st, 2008.

"Computational and Statistical Challenges in Design and Analysis of Association Studies". *Cedar-Sinai Medical Genetics Institute*. November 29th, 2007.

"Computational and Statistical Challenges in Design and Analysis of Association Studies". *VanBUG Seminar, Vancouver, BC*. November 8th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *Google Research*. September 6th, 2007.

"Leveraging the HapMap to Increase the Power of Association Studies". *Carnegie Mellon University*. July 12th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *GRIB, University Pompeu Fabra*. July 5th, 2007.

"Leveraging the HapMap to Increase the Power of Association Studies". *University of the Basque Country, San Sebastian*. June 28th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *Graybill Bioinformatics Workshop*. June 11th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *The Second Annual Information Theory and Applications Workshop (ITA-2007)*. January 30th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *Weizmann Institute*. January 30th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *Tel Aviv University*. January 29th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *Hebrew University*. January 28th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *The Second Annual Imaging Genetics Congress*. January 15th, 2007.

"Whole Genome Associations in Inbred Mouse Strains". *NIEHS Center for Rodent Genetics Annual Conference*. September 27th, 2006.

"Whole Genome Associations in Inbred Mouse Strains". *University of Washington*. July 26th, 2006.

"Whole Genome Associations in Inbred Mouse Strains". *Fourth Bertinoro Computational Biology Meeting*. June 29th, 2006.

"Whole Genome Associations in Inbred Mouse Strains". *3rd International HapMap Project Community Analysis Meeting*. May 10th, 2006.

"Genomic Approaches to Understanding the Genetic Basis of Human Disease". *Carnegie Mellon University*. May 4th, 2006.

"Genomic Approaches to Understanding the Genetic Basis of Human Disease". *University of California, Los Angeles*. April 25th, 2006.

"Genomic Approaches to Understanding the Genetic Basis of Human Disease". *Cornell University*. April 18th, 2006.

"Genomic Approaches to Understanding the Genetic Basis of Human Disease". *University of California, San Diego*. April 5th, 2006.

"Genomic Approaches to Understanding the Genetic Basis of Human Disease". *Tranla-*

tional Genomics Research Institute (TGen). March 29th, 2006.

“Genomic Approaches to Understanding the Genetic Basis of Human Disease”. *Brown University*. March 22nd, 2006.

“Genomic Approaches to Understanding the Genetic Basis of Human Disease”. *University of California, Irvine*. March 1st, 2006.

“Genomic Approaches to Understanding the Genetic Basis of Human Disease”. *Memorial Sloan-Kettering Cancer Center*. February 22nd, 2006.

“Genomic Approaches to Understanding the Genetic Basis of Human Disease”. *Columbia University*. February 20th, 2006.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *University of Southern California*. January 26th, 2006.

“Integrated Genomics Approaches to Discovering the Genetic Basis of Complex Traits in Inbred Mouse Strains”. *University of California, San Diego*. January 18th, 2006.

“Integrated Genomics Approach to Modeling Complex Traits in Inbred Mouse Strains”. *University of Michigan*. November 11th, 2005.

“Human Disease and Human Variation”. *Columbia University*. May 24th, 2005.

“Incorporating Function of Variation into Whole Genome Association Studies”. *Broad Institute*. May 20th, 2005.

“Incorporating Function of Variation into Whole Genome Association Studies”. *Whole Genome Association Symposium*. April 15th, 2005.

“The Structure of Human Variation”. *UCSD Jabobs School of Engineering Research-EXPO*. February 25th, 2005.

“Identifying Associated Haplotype Regions by Phylogenetic Analysis”. *HapMap Consortium Meeting 2004*. April 20th, 2004.

“From Profiles to Patterns and Back Again: A Branch and Bound Algorithm for Finding Near Optimal Motif Profiles”. *The Eight Annual International Conference on Research in Computational Molecular Biology (RECOMB-2004)*. March 29th, 2004.

“Optimally Phasing Long Genomic Regions using Local Haplotype Predictions”. *Perlegen Sciences*. March 21st, 2004.

“Optimally Phasing Long Genomic Regions using Local Haplotype Predictions”. *Second RECOMB Satellite Workshop on Computational Methods for SNPs and Haplotypes*. February 21st, 2004.

“The Homology Kernel: A Biologically Motivated Sequence Embedding”. *Columbia University*. January 27th, 2004.

“Combining Text Mining and Sequence Analysis To Discover Protein Functional Regions”. *The 2004 Pacific Symposium on Biocomputing (PSB-2004)*. January 8th, 2004.

“The Homology Kernel: A Biologically Motivated Sequence Embedding”. *University of California, San Diego*. October 20th, 2003.

“Genome Wide Analysis of Transcription Factor Binding Sites”. *Moscow Conference on Computational Molecular Biology*. July 22nd, 2003.

“The Homology Kernel: A Biologically Motivated Sequence Embedding”. *The Hebrew University*. June 26th, 2003.

“Genome Wide Analysis of Transcription Factor Binding Sites”. *Compugen, Israel*. June 25th, 2003.

“A Unified Framework for Motif Finding: Finding Position Specific Scoring Matrices using Patterns with Mismatches”. *Bertinoro Computational Biology Workshop*. June 8th, 2003.

“Large Scale Reconstruction of Haplotypes from Genotype Data”. *The Seventh Annual International Conference on Research in Computational Molecular Biology (RECOMB-*

2003). April 13th, 2003.

"A Unified Framework for Motif Finding: Finding Position Specific Scoring Matrices using Patterns with Mismatches". *University of Queensland*. March 14th, 2003.

"Large Scale Recovery of Haplotypes from Genotype Data using Imperfect Phylogeny". *University of Newcastle*. March 11th, 2003.

"Large Scale Recovery of Haplotypes from Genotype Data using Imperfect Phylogeny". *Australian National University*. March 5th, 2003.

"A Unified Framework for Motif Finding: Finding Position Specific Scoring Matrices using Patterns with Mismatches". *Australian National University*. February 26th, 2003.

"Biological Sequence Analysis using String Kernels". *Machine Learning Summer School, Australian National University*. February 12-13th, 2003.

"A Unified Framework for Motif Finding: Finding Position Specific Scoring Matrices using Patterns with Mismatches". *University of California, Berkeley*. January 24th, 2003.

"A Unified Approach to Modeling Sequences using String Kernels". *Stanford University*. January 23rd, 2003.

"A Unified Framework for Motif Finding: Finding Position Specific Scoring Matrices using Patterns with Mismatches". *University of California, San Diego*. January 13th, 2003.

"Genome Wide Analysis of Bacterial Promoter Regions". *The 2003 Pacific Symposium on Biocomputing (PSB-2003)*. January 4th, 2003.

"Genome Wide Analysis of Bacterial Regulatory Patterns". *The Hebrew University*. December 22nd, 2002.

"A Unified Approach to Modeling Sequences using String Kernels". *Ben Gurion University*. December 18th, 2002.

"String Kernels applied to Biological Sequence Analysis". *The Hebrew University*. December 8th, 2002.

"Genome Wide Analysis of Bacterial Regulatory Patterns". *Tel Aviv University*. December 4th, 2002.

"Large Scale Recovery of Haplotypes from Genotype Data using Imperfect Phylogeny". *The Hebrew University*. November 24th, 2002.

"Large Scale Recovery of Haplotypes from Genotype Data using Imperfect Phylogeny". *Technion*. November 21st, 2002.

"Genome Wide Analysis of Bacterial Regulatory Patterns". *Columbia University*. September 24th, 2002.

"Genome Wide Analysis of Bacterial Regulatory Patterns". *University of California, San Diego*. August 31st, 2002.

"Finding Composite Regulatory Patterns in DNA Sequences". *Tenth International Conference on Intelligent Systems in Molecular Biology (ISMB-2002)*. August 7th, 2002.

"Finding Composite Regulatory Patterns in DNA Sequences". *New York University*. June 5th, 2002.

"Finding Composite Regulatory Patterns in DNA Sequences". *University of California, Berkeley*. May 14th, 2002.

"Finding Composite Regulatory Patterns in DNA Sequences". *Stanford University*. May 13th, 2002.

"Finding Composite Regulatory Patterns in DNA Sequences". *Cornell University*. May 8th, 2002.

"Finding Composite Regulatory Patterns in DNA Sequences". *University of Pennsylvania*. May 3rd, 2002.

"Sparse Sequence Modeling with Applications to Computational Biology and Intrusion Detection". *University of California, San Diego*. April 17th, 2002.

“Unsupervised Anomaly Detection: Intrusion Detection over Unlabeled Data.”. *University of California, San Diego*. April 17th, 2002.

“Sparse Sequence Modeling with Applications to Computational Biology and Intrusion Detection”. *University of Chicago*. April 15th, 2002.

“Unsupervised Anomaly Detection: Intrusion Detection over Unlabeled Data.”. *DARPA*. April 10th, 2002.

“Sparse Sequence Modeling with Applications to Computational Biology and Intrusion Detection”. *Dartmouth College*. March 1st, 2002.

“Genome-Wide Analysis for Finding Composite Signals in DNA Sequences”. *University of Southern California*. January 10th, 2002.

“Modeling Sparse Sequences.” *Columbia University*. December 10th, 2001.

“Finding Composite Signals in DNA Sequences.” *The Hebrew University*. November 28th, 2001.

“Unsupervised Anomaly Detection with Clustering.” *ACM CCS Workshop on Data Mining Applied to Security (DMSA-2001)*. November 8th, 2001.

“Finding Composite Signals in DNA Sequences.” *University of California, San Diego*. August 29th, 2001.

“Using Mixtures of Common Ancestors for Estimating the Probabilities of Discrete Events in Biological Sequences.” *Ninth International Conference on Intelligent Systems for Molecular Biology (ISMB-2001)*. July 25th, 2001.

“Sparse Markov Transducers for Protein Family Classification.” *The Hebrew University*. July 7th, 2001.

“Detecting Malicious Software with Data Mining Methods.” *2001 IEEE Symposium on Security and Privacy (IEEE S&P-2001)* May 14th, 2001.

“Modeling System Calls with Dynamic Window Sizes.” *National Research Lab*. March 25th, 2001.

“Data Mining-based Intrusion Detection.” *Arcsight*. December 22nd, 2001.

“Adaptive Model Generation for Intrusion Detection Systems.” *2000 ACM CCS Workshop on Intrusion Detection and Prevention (WIDS-2000)*. November 1st, 2001.

“Sparse Markov Transducers.” *University of California, San Diego*. August 19th, 2000.

“Protein Family Classification using Sparse Markov Transducers.” *Eighth International Conference on Intelligent Systems for Molecular Biology (ISMB-2000)*. August 22nd, 2000.

“Anomaly Detection over Noisy Data.” *International Conference on Machine Learning (ICML-2000)*. June 29th, 2000.

“Detecting Errors in the Penn Treebank.” *2000 North American Chapter of the Association of Computational Linguistics (NAACL-2000)*. May 2nd, 2000.

“Teaching Students Machine Learning with Genetic Programming Applied to Othello.” *30th Technical Symposium of the ACM Special Interest Group in Computer Science Education (SIGCSE-1999)*. March 26th, 1999.

“Text Classification using Linguistically Motivated Indicators.” *AAAI-1998 Workshop on Machine Learning for Text Classification (MLTC-98)* July 27th, 1998.

Exhibit 2

[Home](#)[Profile](#)[Network](#)[Jobs](#)[Interests](#)[Business Services](#)[Upgrade](#)Attorney Needed ASAP - Crucial need for local attorney in your area. View new cases today. | [Read More »](#)**Matthew Schultz**

Technology Principal

Greater Philadelphia Area | Information Technology and Services

Current Forrester Research

Previous Forrester Research, Monitor Group, Analytic Business Services

Education Cornell University

[Send Matthew InMail](#)**183**
connectionswww.linkedin.com/pub/matthew-schultz/1/aa7/89**Background****Experience****Technology Principal, Data**

Forrester Research

July 2012 – Present (1 year 7 months)

Responsible for technology strategy & operations along with supporting new business development efforts.

**Sr. Advisor, Tech Marketing Navigator**

Forrester Research

December 2009 – July 2012 (2 years 8 months)

Help clients (technology marketing professionals) plan their marketing mix and spending more effectively.

**Marketing Scientist, Strategic Oxygen**

Monitor Group

June 2007 – December 2009 (2 years 7 months)

Analyzed market research data using statistical tools to identify key insights and test hypotheses.

Project Manager

Analytic Business Services

2003 – 2006 (3 years)

Helped clients answer analytic questions in marketing, finance and operations. Functions included developing & supporting web-based statistical software, sales support and project management.

PhD Student

Cornell University

August 2001 – December 2003 (2 years 5 months)

Researched and developed new mathematical techniques for machine learning and data mining.

**Extreme Blue Software Intern**

IBM

June 2001 – August 2001 (3 months)

Worked as part of a team that was awarded 7 US Patents in knowledge management.

**People Similar to Matthew****Pinar Donmez** 3rdDirector of Data Science at Kabbage, Inc
[Connect](#)

Grow Your Career By Following

Forrester Research**Jared**, get the latest on Forrester Research Jobs, News & more![Follow](#)**People Also Viewed****Andrew Honig**

Software Security Engineer at Google

**Frank Apap**Sr. Director, Pega Academy at
Pegasystems**Manasi Bhattacharyya**

Associate at Latham & Watkins

**Kunal Randery**Director, Analytic Services at
Schireson Associates**Erez Zadok**

Professor at Stony Brook University

**Dr. Andrew Howard Jr.**

Adjunct Professor at Columbia College

**Delos Larson**Deputy General Counsel at Merit
Medical Systems, Inc.**Calvin Chu**Managing Director at R/GA Accelerator
Powered by Techstars**Brian Witten**Senior Director, Mobile Engineering at
Symantec**Demetrios Frangos**

Student Researcher

Columbia University

June 2000 – August 2001 (1 year 3 months)

Researched new applications in computer security and was awarded a US Patent and Best Paper at USENIX-FREENIX.



Principal Consultant at Forrester Research

Skills & Expertise

Most endorsed for...

5	Analytics						
5	Data Analysis						
3	Data Mining						
3	IT Strategy						
2	Business Intelligence						
2	Manage Client...						
2	Software Development						
2	Marketing Research						
2	Machine Learning						
2	Software Design						

Matthew also knows about...

2	Big Data	2	Strategy	2	Market Research	1	Data Science
1	Software Architectural...	1	Information Retrieval	1	Applied Mathematics		
1	Competitive Intelligence	1	Project Management	1	Statistical Programming		
1	R	1	Artificial Intelligence	1	Software Engineering		

Education

Cornell University

M.S., Computer Science

2001 – 2004

University Fellowship



Columbia University in the City of New York

B.A., Computer Science

1997 – 2001

Men's Swimming and Diving Team Captain (2000-2001),
Russell C Mills Award for Excellence in Computer Science



People Similar to Matthew



Pinar Donmez 3rd

Director of Data Science at Kabbage, Inc
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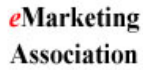
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Exhibit 3



Erez Zadok

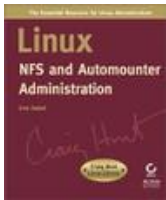
My name is Erez Zadok, and I am an Associate Professor at the [Computer Science Department](#) of [Stony Brook University](#). I direct the [Filesystems and Storage Lab](#) at the CS department. My research interests include file systems and storage, operating systems, energy efficiency, performance and benchmarking, security, networking, compilers, and software engineering. You can [send me email](#), and see my [complete contact information](#) and also my [PGP key](#).



I am looking to recruit a few new PhD and MS students to join my lab, both from existing students at Stony Brook (from all levels) as well as new applicants. If interested, click [here](#) for more information.

Research	Publications	Teaching	Software	Grad Resources	Misc
My FSL Lab Projects Students Sponsors Publications	Books Papers Articles Manuals Technical Reports Works-in-Progress	CSE-376 'F13 CSE-506 'S13 CSE-595 'S13 CSE-306 'F12 Project Courses	Unionfs Wrapfs FiST Am-Utils Auto-pilot Tracefs	General Info Writing Guides Jobs	B5JMS filesystems.org My book IA Scholarships LUGSB

Favorites:



Conference on
File and Storage Technologies (FAST)



(Last updated: 2013-08-31)

Erez Zadok

Computer Science Department

2313-B Computer Science Building

Stony Brook University

Stony Brook, NY 11794-4400

Phone: +1 631 632 8461 (Office)

+1 631 632 8243 (Fax)

Web: <http://www.cs.stonybrook.edu/~ezk>

Email: See <http://www.cs.stonybrook.edu/~ezk/images/ezkemail.png>

(which is linked off of my main Web site, under "send me email").

Exhibit 4

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Associate**E** manasi.bhattacharyya@lw.com**T** +1.312.777.7068[Add to contacts](#)**Chicago**

233 South Wacker Drive, Suite 5800

Chicago, IL 60606

USA

EXPERTISE

Manasi Bhattacharyya is a member of the Corporate Department of Latham & Watkins. Before joining our Chicago office in 2011, she practiced corporate law in Latham's New York office. Her practice focuses primarily on capital markets transactions and general securities regulation and corporate law matters.

Ms. Bhattacharyya's clients include underwriters, initial purchasers and both US and non-US issuers of public and private debt and equity in a broad array of industries, including chemicals, pharmaceuticals, telecommunications, energy, manufacturing, publishing, media and technology.

Prior to attending law school, Ms. Bhattacharyya worked as a software developer in the financial services industry for Capital IQ, Inc. (A Standard & Poor's Business). Ms. Bhattacharyya received a bachelor of science and master of science in computer science from Columbia University, School of Engineering and Applied Science.

Bar Qualification

Illinois

New Jersey

New York

Education

JD, Georgetown University Law Center, 2007

MS, Columbia University, 2002

BS, Columbia University, 2001

Practices

Capital Markets

Public Company Representation

Exhibit 5

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Frank Apap

3rd

Sr. Director, Pega Academy at Pegasystems

Greater New York City Area | Computer Software

Previous Pegasystems

Education Columbia University in the City of New York

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**Andrew Honig**

Software Security Engineer at Google

Matthew Schultz

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Dereck Cate

Sr. Director, Pega Academy Global Delivery at Pegasystems

Kim Griffin

Senior Director of Knowledge Products at Pegasystems

Benjamin Baril

Solutions Engineering Manager at Pegasystems

David Vidoni

Vice President Information Technology at Pegasystems

Mike Procek

Senior Director, Solutions Development at Pegasystems

Erez Zadok

Professor at Stony Brook University

Manasi Bhattacharyya

Associate at Latham & Watkins

Kerim Akgonul

Exhibit 6

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Andrew Honig

3rd

Software Security Engineer at Google

Seattle, Washington | Computer & Network Security

Current Google

Previous National Security Agency, MITRE

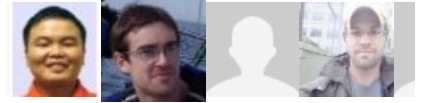
Education Washington State University

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People Similar to Andrew

**Brandon Yarbrough**Software Development Engineer at Google
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People Also Viewed

**Paolo Bonzini**

Principal Software Engineer at Red Hat

Matthew Schultz

Technology Principal

Delos Larson

Deputy General Counsel at Merit Medical Systems, Inc.

Calvin ChuManaging Director at R/GA Accelerator
Powered by Techstars**Brian Witten**

Senior Director, Mobile Engineering at Symantec

Keith Scranton

Complex and Class Action Litigation Attorney

Umapathy Venkatachalam

Technical Lead

Greg Riggs

Operations Manager at Microsoft Corporation

Will Frost

Senior Software Development Engineer at Microsoft

Zohreh Amini

Student at Shiraz University

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Exhibit 7

Dr. Shlomo Hershkop

Assistant Director, Computing Research Facilities
Adjunct Assistant Professor
Department of Computer Science, Columbia University



Contact info:

Office: 480 CSB
Phone: 646 - 775 - 6041
Email: shlomo@cs.columbia.edu
Mail: Dr. Shlomo Hershkop
450 Computer Science
Columbia University
500W 120th St.
New York, NY 10027

About Me

Current Research

Past Teaching

Recent Publications

Exhibit 8



Angelos Keromytis is an associate professor in the [Computer Science department](#) at [Columbia University](#), in New York. He is also the director of the [Network Security Lab](#).

His general research interests are in systems and network security, and cryptography. His current interests revolve around [software hardening](#), [system self-healing](#), network denial of service, information accountability, and privacy.

In the past, he was an active participant in the [IETF](#) (Internet Engineering Task Force), and in particular the [IPsec](#) and IPSP Working Groups. He occasionally contributed to the [OpenBSD operating system](#): he was the primary author of the IPsec stack and the OpenBSD Cryptographic Framework (OCF), which was later ported to FreeBSD and NetBSD.

Other large projects he worked on in the past include the [KeyNote](#) trust-management system and the [STRONGMAN](#) access control management system, the [AEGIS](#) secure bootstrap architecture and the [SwitchWare](#) Active Network architecture.

An up to date CV, including a complete list of publications, can be found [here](#).

Contact Information

*Department of Computer Science
Columbia University
1214 Amsterdam Avenue, M.C. 0401
New York, NY 10027-7003
+1 212 939 7095 (voice)
+1 212 666 0140 (fax)*

Current Department/Teaching Activities

[COMS W4180 - Network Security](#)
Tuesday/Thursday, 1:10-2:25pm, Mudd 535

Office hours: Tuesday/Thursday 3:00-4:00pm
Location: 515 Computer Science Bldg.

Current/Recent Professional Activities

Member, Scientific Advisory Board, [Center for Research and Technology Hellas \(CERTH\)](#), 2008 - 2011
Steering Committee, [New Security Paradigms Workshop \(NSPW\)](#)

Angelos D. Keromytis - *Curriculum Vitae*

Positions Held

- **July 2013 - Present**
Program Director
Division of Computer and Network Systems (CNS), Directorate for Computer & Information Science & Engineering (CISE)
National Science Foundation (NSF), Arlington, VA
- **January 2009 - January 2010**
Senior Research Engineer
Symantec Research Labs Europe, Sophia Antipolis, France
- **January 2006 - Present**
Associate Professor
Department of Computer Science, Columbia University, New York
- **July 2001 - December 2005**
Assistant Professor
Department of Computer Science, Columbia University, New York
- **September 1996 - July 2001**
Research Assistant
Computer and Information Science Department, University of Pennsylvania, Philadelphia, PA
- **January 1993 - October 1995**
Member of the Technical Staff
FORTHnet S.A., Heraklion, Greece
- **September 1991 - January 1993**
Member of the Technical Staff
Education Team, Computer Center of the University of Crete, Heraklion, Greece

Education

- **November 2001**
Ph.D. (Computer Science), University of Pennsylvania, USA
- **August 1997**
M.Sc. (Computer Science), University of Pennsylvania, USA
- **June 1996**
B.Sc. (Computer Science), University of Crete, Greece

Service and Teaching

Editorial Boards and Steering Committees

- Associate Editor, [Encyclopedia of Cryptography and Security \(2nd Edition\)](#), Springer, 2010 - 2011.
- Associate Editor, IET (formerly IEE) Proceedings Information Security, 2005 - 2010.
- Steering Committee, *ISOC Symposium on Network and Distributed System Security (SNDSS)*, 2006 - 2009.
- Steering Committee, *New Security Paradigms Workshop (NSPW)*, 2007 onward.
- Associate Editor, ACM Transactions on Information and System Security (TISSEC), 2004 - 2010.
- Steering Committee, *USENIX Workshop on Hot Topics in Security (HotSec)*, 2006 - 2009.
- Steering Committee, *Computer Security Architecture Workshop (CSAW)*, 2007 - 2009.

Program Chair

- Program co-Chair, 8th International ICST Conference on Security and Privacy in Communication Networks (SecureComm), 2012.
- Program Chair, 16th International Conference on Financial Cryptography and Data Security (FC), 2012.
- Program co-Chair, 17th ACM Computer and Communication Security (CCS), 2010.
- Program co-Chair, 16th ACM Computer and Communication Security (CCS), 2009.
- Program co-Chair, New Security Paradigms Workshop (NSPW), 2008.
- Program co-Chair, New Security Paradigms Workshop (NSPW), 2007.
- Chair, 27th International Conference on Distributed Computing Systems (ICDCS), *Security Track*, 2007.
- Chair, 16th World Wide Web (WWW) Conference, *Security, Privacy, Reliability and Ethics Track*, 2007.
- Chair, 15th USENIX Security Symposium, 2006.
- Deputy Chair, 15th World Wide Web (WWW) Conference, *Security, Privacy and Ethics Track*, 2006.
- Chair, 3rd Workshop on Rapid Malcode (WORM), 2005.
- Program co-Chair, 3rd Applied Cryptography and Network Security (ACNS) Conference, 2005.
- Program co-Chair, OpenSig Workshop, 2003.

Program Organization

- General Chair, New Security Paradigms Workshop (NSPW), 2010.
- General Vice Chair, New Security Paradigms Workshop (NSPW), 2009.
- Co-chair, Invited Talks, 17th USENIX Security Symposium, 2008.
- General co-chair, Applied Cryptography and Network Security (ACNS) Conference, 2008.
- Co-chair, Invited Talks, 16th USENIX Security Symposium, 2007.
- Organizing Committee, Columbia/IBM/Stevens Security & Privacy Day (bi-annual event).
 - Organizer, Columbia/IBM/Stevens Security & Privacy Day, December 2010.
 - Organizer, Columbia/IBM/Stevens Security & Privacy Day, June 2007.
- Co-organizer, ARO/FSTC Workshop on Insider Attack and Cyber Security, 2007.
- Publicity co-Chair, ACM Conference on Computer and Communications Security, 2006.
- General co-Chair, OpenSig Workshop, 2003.

Program Committees

1. Program Committee, International Workshop on Security (IWSEC), 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014.
2. Program Committee, ACM Conference on Computer and Communications Security (CCS), 2005, 2007, 2008, 2009, 2010, 2012, 2013.
3. Program Committee, ISOC Symposium on Network and Distributed Systems Security (SNDSS), 2003, 2004, 2006, 2007, 2008, 2012.
4. Program Committee, Applied Cryptography and Network Security (ACNS) Conference, 2005, 2006, 2010, 2011, 2012, 2013.
5. Program Committee, Information Security Conference (ISC), 2005, 2007, 2009, 2011, 2012.
6. Program Committee, Financial Cryptography (FC) Conference, 2002, 2010, 2011, 2012, 2013.
7. Program Committee, European Workshop on Systems Security (EuroSec), 2009, 2010, 2011, 2012, 2013.
8. Program Committee, USENIX Security Symposium, 2004, 2005, 2006, 2008.
9. Program Committee, International Conference on Distributed Computing Systems (ICDCS), *Security Track*, 2005, 2006, 2007, 2008.
10. Program Committee, Workshop on Rapid Malcode (WORM), 2004, 2005, 2006, 2007.
11. Program Committee, World Wide Web Conference (WWW), 2005, 2006, 2007.
12. Program Committee, USENIX Workshop on Hot Topics in Security (HotSec), 2006, 2007, 2010.
13. Program Committee, Annual Computer Security Applications Conference (ACSAC), 2006, 2007, 2011.
14. Program Committee, USENIX Technical Conference, *Freely Distributable Software (Freenix) Track*, 1998, 1999, 2003.
15. Program Committee, International Conference on Mathematical Methods, Models and Architectures for Computer Network Security (MMM-ACNS), 2007, 2010, 2012.
16. Program Committee, IEEE Security & Privacy Symposium, 2006, 2008.
17. Program Committee, ACM SIGCOMM Workshop on Large Scale Attack Defense (LSAD), 2006, 2007.
18. Program Committee, New Security Paradigms Workshop (NSPW), 2007, 2008.
19. Program Committee, IEEE WETICE Workshop on Enterprise Security, 2002, 2003.
20. Program Committee, USENIX Annual Technical Conference (ATC), 2008, 2011.
21. Program Committee, 6th International Conference on Cryptology and Network Security (CANS), 2007, 2012.
22. Program Committee, Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), Dependable Computing and Communication Symposium (DCCS), 2010, 2013.
23. Program Committee, 1st International Conference on Human Aspects of Information Security, Privacy and Trust (HAS), 2013.

24. Program Committee, Workshop on Information Security Theory and Practice (WISTP), 2012.
25. Program Committee, European Symposium on Research in Computer Security (ESORICS), 2011.
26. Program Committee, International Workshop on Mobile Security (WMS), 2010.
27. Program Committee, Computer Forensics in Software Engineering Workshop, 2009.
28. Program Committee, USENIX Workshop on Large-scale Exploits and Emergent Threats (LEET), 2008.
29. Program Committee, 23rd International Information Security Conference (IFIP SEC), 2008.
30. Program Committee, Joint iTrust and PST Conferences on Privacy, Trust Management and Security (IFIPTM), 2008.
31. Program Committee, 1st Computer Security Architecture Workshop (CSAW), 2007.
32. Program Committee, 8th IEEE Information Assurance Workshop (IAW), 2007.
33. Program Committee, Anti-Phishing Working Group (APWG) eCrime Researchers Summit, 2007.
34. Program Committee, 4th GI International Conference on Detection of Intrusions & Malware, and Vulnerability Assessment (DIMVA), 2007.
35. Program Committee, 2nd ACM Symposium on Information, Computer and Communications Security (AsiaCCS), 2007.
36. Program Committee, 2nd Workshop on Advances in Trusted Computing (WATC), 2006.
37. Program Committee, International Conference on Information and Communications Security (ICICS), 2006.
38. Program Committee, 2nd Workshop on Secure Network Protocols (NPsec), 2006.
39. Program Committee, 1st Workshop on Hot Topics in System Dependability (HotDep), 2005.
40. Program Committee, 20th ACM Symposium on Applied Computing (SAC), Trust, Recommendations, Evidence and other Collaboration Know-how (TRECK) Track, 2005.
41. Program Committee, 1st Workshop on Operating System and Architecture Support for the on demand IT Infrastructure (OASIS), 2004.
42. Program Committee, Workshop on Information Security Applications (WISA), 2004.
43. Program Committee, Workshop on Logical Foundations of an Adaptive Security Infrastructure (WOLFASI), 2004.
44. Program Committee, 29th IEEE Conference on Local Computer Networks (LCN), 2004.
45. Program Committee, 2nd International Conference on Trust Management, 2004.
46. Program Committee, Asia BSD Conference, 2004.
47. Program Committee, 2nd Annual New York Metro Area Networking Workshop (NYMAN), 2002.
48. Program Committee, Cloud Computing Security Workshop (CCSW), 2009.
49. Program Committee, Workshop on Grid and Cloud Security (WGC-Sec), 2011.
50. Program Committee, Workshop on Cyber Security Experimentation and Test (CSET), 2011.
51. Program Committee, OWASP AppSec EU, 2012.
52. Program Committee, 1st International Workshop on Cyber Crime (IWCC), 2012.
53. Program Committee, 8th China International Conference on Information Security and Cryptology (INSCRYPT), 2012.
54. Program Committee, NDSS Workshop on Security of Emerging Networking Technologies (SENT), 2014.

Advisory Workshops

- ODNI/NSA Invitational Workshop on Computational Cybersecurity in Compromised Environments (C3E), West Point, NY, January 2013.
- DARPA ISAT Summer Meeting, Arlington, VA, August 2013.
- NITRD/SCORE Invitational Workshop on Designing-in Security: Current Practices and Research Needs, Arlington, VA, July 2013.
- MITRE/NSA Invitational Annual Secure and Resilient Cyber Architectures Workshop, McLean, VA, June 2013.
- ONR Workshop on Automated Software Complexity Reduction for Retaining Software Execution Efficiency and Increasing Security, McLean, VA, June 2013.
- ARO Cloud Security Workshop, Fairfax, VA, March 2013.
- Cyber Security Research Institute (CSRI) Invitational Workshop, Arlington, VA, April 2012.
- ODNI/NSA Invitational Workshop on Computational Cybersecurity in Compromised Environments (C3E), Keystone, CO, September 2011.
- ONR Workshop on Host Computer Security, Chicago, IL, October 2010.
- Intel Workshop on Trust Evidence and End-to-end Trust in Heterogeneous Environments, Santa Clara, CA, May 2010.
- Intelligence Community Technical Exchange on Moving Target, Washington, DC, April 2010.
- Lockheed Martin Future Security Threats Workshop, New York, NY, November 2009.
- Air Force Office for Scientific Research (AFOSR) Invitational Workshop on Homogeneous Enclave Software vs Heterogeneous Enclave Software, Arlington, VA, October 2007.
- NSF Future Internet Network Design Working Meeting, Arlington, VA, June 2007.
- ARO/FSTC Workshop on Insider Attack and Cyber Security, Arlington, VA, June 2007.
- NSF Invitational Workshop on Future Directions for the CyberTrust Program, Pittsburgh, PA, October 2006.
- ARO/HSARPA Invitational Workshop on Malware Detection, Arlington, VA, August 2005.
- Department of Defense Invitational Workshop on the Complex Behavior of Adaptive, Network-Centric Systems, College Park, MD, July 2005.

- ARPA Next Generation Warfare Invitational Workshop, Annapolis Junction, MD, March 2005.
- Co-leader of session on "Securing software environments", joint NSF and Department of Treasury Invitational Workshop on Resilient Financial Information Systems, Washington, DC, March 2005.
- DARPA Application Communities Invitational Workshop, Arlington, VA, October 2004.
- DARPA APNets Invitational Workshop, Philadelphia, PA, December 2003.
- NSF/NIST Invitational Workshop on Cybersecurity Workforce Needs Assessment and Educational Innovation, Arlington, VA, August 2003.
- NSF Invitational Workshop on Large Scale Cyber-Security, Lansdowne, VA, March 2003.
- IP Security Working Group Secretary, Internet Engineering Task Force (IETF), 2003 - 2008.
- Session moderator, Workshop on Intelligence and Research, Florham Park, NJ, October 2001.
- DARPA Composable High Assurance Trusted Systems #2 (CHATS2) Invitational Workshop, Napa, CA, November 2000.

Other Professional Activities

- ACM Distinguished Scientist, 2012 onward.
- Member, Executive Committee for the *Institute for Data Sciences and Engineering (IDSE)*, Columbia University, 2012 - 2013.
- Co-chair, ACM Computing Classification System Update Committee ("Security and Privacy" top-level node), 2011.
- Founder, *Allure Security Technology Inc.*, 2010 - present.
- Member, ACM Computing Classification System Update Committee (top two levels), 2010.
- External Advisory Board member, "*i-code: Real-time Malicious Code Identification*", EU project, 2010 - 2012.
- Reviewer (grant applications), Greek Ministry of Education, 2010.
- Reviewer (grant applications), Danish National Research Foundation, 2010.
- Member of the Scientific Advisory Board, *Centre for Research and Technology, Hellas (CERTH)*, 2008 - 2011.
- Senior Member of the ACM, 2008 onward.
- Senior Member of the IEEE, 2009 onward.
- Visiting Scientist, Institute for Infocomm Research (I²R), Singapore, February - May 2007.
- Columbia Representative to the Institute for Information Infrastructure Protection (I3P), 2006 - 2008.
- Technical Advisory Board, *StackSafe Inc.* (formerly *Revive Systems Inc.*), 2006 - 2009.
- Technical Advisory Board, *Radiuz Inc.*, 2006.
- Reviewer (grant applications), Institute for Security Technology Studies (ISTS), Dartmouth College, 2006.
- Reviewer, Singapore National Science and Technology Awards (NSTA), 2006.
- Board of Directors, *StackSafe Inc.* (formerly *Revive Systems Inc.*), 2005 - 2009.
- Founder, *StackSafe Inc.* (formerly *Revive Systems Inc.*), 2005 - 2009.
- Expert witness in criminal and intellectual property litigation cases, 2005, 2006, 2007, 2009, 2010, 2011, 2012, 2013.
- Science Fair Judge, Middle School for Democracy and Leadership, Brooklyn, NY, 2005, 2006.
- Reviewer (grant applications), Swiss National Science Foundation, 2007.
- Reviewer (grant applications), Netherlands Organisation for Scientific Research, 2005, 2006.
- Reviewer (grant applications), US/Israel Binational Science Foundation, 2003, 2005.
- NSF reviewer & panelist, 2002, 2003, 2006, 2008, 2009, 2011, 2012, 2013.
- Internet Engineering Task Force (IETF) Security Area Advisor, 2001 - 2008.

Ph.D. Thesis Committee Service

1. Kapil Anand, "*Binary Analysis Based on a Compiler-level Intermediate Representation*", Electrical and Computer Engineering Department, University of Maryland, July 2013.
2. Theodoor Scholte, "*Securing Web Applications by Design*", Computer Science Group, Communications and Electronics Department, Ecole Nationale Supérieure des Telecommunications, May 2012.
3. Maritza Johnson, "*Toward Usable Access Control for End-Users: A Case Study of Facebook Privacy Settings*", Department of Computer Science, Columbia University, April 2012.
4. Collin R. Mulliner, "*On the Impact of the Cellular Modem on the Security of Mobile Phones*", Technische Universität Berlin, December 2011.
5. Malek Ben Salem, "*Towards Effective Masquerade Attack Detection*", Department of Computer Science, Columbia University, October 2011.
6. Michalis Polychronakis, "*Generic Code Injection Attack Detection using Code Emulation*", Computer Science Department, University of Crete, October 2009.
7. Spyros Antonatos, "*Defending against Known and Unknown Attacks using a Network of Affined Honeypots*", Computer Science Department, University of Crete, October 2009.
8. Van-Hau Pham, "*Honeypot Traces Forensics by Means of Attack Event Identification*", Computer Science Group, Communications and Electronics Department, Ecole Nationale Supérieure des Telecommunications, September 2009.
9. Gabriela F. Ciocarlie, "*Towards Self-Adaptive Anomaly Detection Sensors*", Department of Computer Science, Columbia University, September 2009.

10. Vanessa Frias-Martinez, "*Behavior-Based Admission and Access Control for Network Security*", Department of Computer Science, Columbia University, September 2008.
11. Wei-Jen Li, "*SPARSE: A Hybrid System for Malcode-Bearing Document Detection*", Department of Computer Science, Columbia University, June 2008.
12. Raj Kumar Rajendran, "*The Method for Strong Detection for Distributed Routing*", Electrical Engineering Department, Columbia University, March 2008.
13. Constantin Serban, "*Advances in Decentralized and Stateful Access Control*", Computer Science Department, Rutgers University, December 2007.
14. Ricardo A. Baratto, "*THINC: A Virtual and Remote Display Architecture for Desktop Computing*", Computer Science Department, Columbia University, October 2007.
15. Zhenkai Liang, "*Techniques in Automated Cyber-Attack Response and Recovery*", Computer Science Department, Stony Brook University, November 2006.
16. Ke Wang, "*Network Payload-based Anomaly Detection and Content-based Alert Correlation*", Computer Science Department, Columbia University, August 2006.
17. Seoung-Bum Lee, "*Adaptive Quality of Service for Wireless Ad hoc Networks*", Electrical Engineering Department, Columbia University, June 2006.
18. Shlomo HersHKop, "*Behavior-based Email Analysis with Application to Spam Detection*", Computer Science Department, Columbia University, August 2005.
19. Gaurav S. Kc, "*Defending Software Against Process-subversion Attacks*", Computer Science Department, Columbia University, April 2005.
20. Gong Su, "*MOVE: A New Virtualization Approach to Mobile Communication*", Computer Science Department, Columbia University, May 2004.
21. Jonathan M. Lennox, "*Services for Internet Telephony*", Computer Science Department, Columbia University, December 2003.
22. Michael E. Kounavis, "*Programming Network Architectures*", Electrical Engineering Department, Columbia University, June 2003.
23. Wenyu Jiang, "*QoS Measurement and Management for Internet Real-time Multimedia Services*", Computer Science Department, Columbia University, April 2003.

Post-doctoral Students / Research Scientists

1. Hyung Chan Kim (October 2007 - October 2008)
2. Stelios Sidiroglou (October 2008 - December 2008)
3. Dimitris Geneiatakis (June 2010 - September 2011)
4. Georgios Portokalidis (March 2010 - December 2012)
5. Elias Athanasopoulos (January 2012 - November 2013)
6. Michalis Polychronakis (May 2010 - present)
7. Yossef Oren (December 2013 - present)

Current Ph.D. Students

1. Ihimu Ukpo (October 2013 - present)
2. Alexander W. Miranda (September 2013 - present)
3. Suphannee Sivakorn (September 2013 - present)
4. Amos Alubala (September 2012 - present) Marios Pomonis (September 2012 - present)
5. Theofilos Petsios (September 2012 - present)
6. Georgios Argyros (September 2012 - present)
7. Georgios Kontaxis (September 2011 - present)
8. Vasilis Pappas (September 2009 - present)
9. Vasileios Kemerlis (September 2008 - present)
10. Kangkook Jee (January 2008 - present)
11. Angelika Zavou (September 2006 - present)

Graduated Ph.D. Students

1. Debra Cook (January 2002 - June 2006)
 - o Thesis title: "*Elastic Block Ciphers*"
 - o Post-graduation: Member of the Technical Staff, Bell Labs
 - o Currently: Research Staff Member, Telcordia Research
2. Angelos Stavrou (January 2003 - August 2007)
 - o Thesis title: "*An Overlay Architecture for End-to-End Service Availability*" (awarded with distinction)
 - o Post-graduation: Assistant Professor, Computer Science Department, George Mason University (GMU)

- Currently: Associate Professor, Computer Science Department, George Mason University (GMCU)
- 3. Michael E. Locasto (September 2002 - December 2007)
 - Thesis title: *"Integrity Postures for Software Self-Defense"* (awarded with distinction)
 - Post-graduation: ISTS Research Fellow, Dartmouth College
 - Currently: Assistant Professor, Department of Computer Science, University of Calgary
- 4. Stelios Sidiroglou (June 2003 - May 2008)
 - Thesis title: *"Software Self-healing Using Error Virtualization"*
 - Post-graduation: Research Scientist, Columbia University
 - Currently: Research Scientist, MIT CSAIL
- 5. Mansoor Alicherry (September 2006 - October 2010)
 - Thesis title: *"A Distributed Policy Enforcement Architecture for Mobile Ad Hoc Networks"*
 - Post-graduation: Member of the Technical Staff, Alcatel-Lucent Bell Labs
 - Currently: VP of Engineering, Vizuri Interactive
- 6. Brian Bowen (September 2007 - December 2010; co-advised with Salvatore J. Stolfo)
 - Thesis title: *"Design and Analysis of Decoy Systems for Computer Security"*
 - Post-graduation: Member of the Technical Staff, Sandia National Laboratories
 - Currently: Member of the Technical Staff, Sandia National Laboratories
- 7. Sambuddho Chakravarty (January 2007 - December 2013)
 - Thesis title: *Traffic Analysis Attacks and Defense in Low Latency Anonymous Communication*
 - Post-graduation:
 - Currently:

Service at Columbia

- Computer Science Department Ph.D. Committee, 2010 - 2011
- Computer Science Department Computing Research Facilities committee, 2001 - 2008, 2010 - 2013
 - Chair, 2003 - 2005, 2011 - 2013
- M.Sc. Admissions committee, 2007 - 2013.
- M.Sc. Committee, 2008 - 2013.
- Computer Science Department Faculty Recruiting committee, 2002, 2008, 2012
- Columbia committee on Research Conflict of Interest Policy, 2007 - 2008
- Co-organizer, Computer Science Faculty Retreat, Fall 2007
- Advisor for the School of Engineering Computer Science Majors, Freshmen & Sophomores, 2004 - 2005
- Computer Science Department Undergraduate Admissions Representative, 2003 - 2008
- Advisor for the School of Engineering Computer Science Majors, Seniors, 2003 - 2004, 2006 - 2007
- Computer Science Department Space Allocation Policy committee, 2002 - 2010
- Computer Science Department Events Representative, 2002 - 2008
- Advisor for the School of Engineering Computer Science Majors, Juniors, 2002 - 2003, 2005 - 2006
- Computer Science Department CRF Director Hiring committee, 2003
- Advisor for the School of Engineering Computer Science Majors, Sophomores, 2001 - 2002
- Computer Science Department Faculty Recruiting committee, 2001 - 2002
- Executive Vice Provost committee on Columbia's response to the 9/11 events, Fall 2001

Teaching

(Scores indicate mean overall course quality rating from student survey; survey not conducted for summer sessions)

- Instructor, COMS E6183-1 - Advanced Topics in Network Security, Columbia University
 - Fall 2006: 17 on-campus students (4.58/5)
- Instructor, COMS W6998.1 - Advanced Topics in Network Security, Columbia University
 - Fall 2004: 17 on-campus students (4.62/5)
 - Spring 2003: 18 on-campus students (N/A)
- Instructor, COMS W4180 - Network Security, Columbia University
 - Fall 2012: 19 on-campus and 3 CVN students (4.64/5)
 - Spring 2012: 21 on-campus and 2 CVN students (4.33/5)
 - Spring 2011: 4 CVN students (N/A)
 - Fall 2010: 2 CVN students (N/A)
 - Spring 2010: 25 on-campus and 5 CVN students (4.48/5)
 - Summer 2006: 7 CVN students (N/A)
 - Spring 2006: 63 on-campus and 9 CVN students (4.14/5)
 - Summer 2005: 4 CVN students (N/A)
 - Spring 2005: 41 on-campus and 5 CVN students (4.25/5)

- o Summer 2004: 6 CVN students (N/A)
 - o Fall 2003: 45 on-campus and 12 CVN students (3.74/5)
 - o Summer 2003: 5 CVN students (N/A)
 - o Fall 2002: 43 on-campus and 9 CVN students (3.21/5)
 - o Fall 2001: 23 on-campus students (3.6/5)
- Instructor, COMS W4118 - Operating Systems, Columbia University
 - o Summer 2007: 8 CVN students (N/A)
 - o Fall 2006: 59 on-campus and 7 CVN students (3.73/5)
 - o Summer 2006: 15 CVN students (N/A)
 - o Fall 2005: 52 on-campus and 9 CVN students (3.86/5)
 - o Spring 2004: 32 on-campus and 4 CVN students (3.39/5)
 - o Spring 2002: 37 on-campus students (3.13/5)
- Instructor, COMS W3157 - Advanced Programming, Columbia University
 - o Fall 2010: 37 on-campus students (3.25/5)
 - o Fall 2007: 30 on-campus students (4.16/5)
- Instructor, CIS700/002 - Building Secure Systems, University of Pennsylvania, Spring 1998

Support for Research and Teaching (Gifts and Grants)

1. PI (with Sal Stolfo), "*Trust Estimation System for Wireless Networks via Multi-Pronged Detection (TREND)*", DARPA Wireless Network Defense (WND), **\$253,700** (10/2013 - 09/2014; part of a larger project)
2. co-PI (with Michalis Polychronakis), "*TWC: Small: Virtual Private Social Networks*", NSF Secure and Trustworthy Computing (SaTC), CNS-13-18415, **\$498,332** (09/2013 - 08/2016)
3. PI, "*Runtime Program Behavior Monitoring Combining Control and Data Flow Tracking*", Intel (research gift), **\$92,000** (06/2013)
4. PI, "*REU: TWC: Small: Auditing PII in the Cloud with CloudFence*", NSF Secure and Trustworthy Computing (SaTC), **\$15,600** (05/2013 - 08/2013)
5. PI, "*Runtime Program Behavior Monitoring Combining Control and Data Flow Tracking*", Intel (research gift), **\$92,000** (09/2012)
6. PI, "*TWC: Small: Auditing PII in the Cloud with CloudFence*", NSF Secure and Trustworthy Computing (SaTC), CNS-12-22748, **\$499,998** (09/2012 - 08/2015)
7. PI, "*MINESTRONE Task: Automatic Discovery of Rescue Points Using Static and Dynamic Analysis*", IARPA, **\$270,400** (09/2012 - 11/2014)
8. PI, "*Vulnerability Protections for End Nodes (VPEN)*", Air Force Research Labs (AFRL), **\$263,385** (08/2012 - 07/2013)
9. PI, "*NSF Support for the 2012 New Security Paradigms Workshop Financial Aid*", NSF Trustworthy Computing, **\$10,000** (07/2012 - 08/2013)
10. co-PI (with Junfeng Yang), "*Transparently Extending Programs at Compilation to Prevent Bugs*", ONR, **\$749,975** (07/2012 - 06/2015)
11. PI (co-PIs: Junfeng Yang, Sal Stolfo), "*MINESTRONE, Phase 2 Extension*", IARPA, **\$637,624** (08/2010 - 11/2014; leading team that includes Stanford University, George Mason University, and Symantec Corp.)
12. PI (co-PIs: Roxana Geambasu, Junfeng Yang, Simha Sethumadhavan, Sal Stolfo), "*MEERKATS: Maintaining EnterprisE Resiliency via Kaleidoscopic Adaptation & Transformation of Software Services*", DARPA MRC, **\$6,619,270** (09/2011 - 09/2015; leading team that includes George Mason University and Symantec Corp.)
13. co-PI (with Tal Malkin, Steve Bellovin, and Vladimir Kolesnikov), "*Practical and Secure Database Access Using Encrypted Bloom Filters*", IARPA, **\$2,236,144** (09/2011 - 03/2015)
14. PI, "*NSF Support for the 2011 New Security Paradigms Workshop Financial Aid (Supplement)*", NSF Trustworthy Computing, **\$10,000** (06/2011 - 07/2012)
15. PI, "*Leveraging the Cloud to Audit Use of Sensitive Information*", Google (research gift), **\$60,200** (05/2011)
16. co-PI (with Sal Stolfo), "*ADAMS Advanced Behavioral Sensors (ABS)*", DARPA ADAMS, **\$780,996** (05/2011 - 04/2013)
17. PI, "*Tracking Sensitive Information Flows in Modern Enterprises*", Intel, **\$84,951** (12/2010 - 12/2011)
18. co-PI (with Simha Sethumadhavan, Sal Stolfo, Junfeng Yang, and David August @ Princeton), "*SPARCHS: Symbiotic, Polymorphic, Autotomic, Resilient, Clean-slate, Host Security*", DARPA CRASH, **\$6,424,180** (10/2010 - 09/2014)
19. PI, "*NSF Support for the 2010 New Security Paradigms Workshop Financial Aid*", NSF Trustworthy Computing, **\$10,000** (09/2010 - 08/2011)
20. PI (co-PIs: Junfeng Yang, Sal Stolfo), "*MINESTRONE*", IARPA, **\$7,530,113** (08/2010 - 07/2014; leading team that includes Stanford University, George Mason University, and Symantec Corp.)
21. co-PI (with Junfeng Yang and Dawong Engler @ Stanford), "*Seed: CSR: Large: Collaborative Research: SemGrep: Improving Software Reliability Through Semantic Similarity Bug Search*", NSF CSR, CNS-10-12107, **\$325,000** (07/2010 - 06/2011)
22. PI, "*Tracking Sensitive Information Flows in Modern Enterprises*", Intel, **\$82,286** (08/2009 - 07/2010)
23. PI, "*Supplement for International Research Collaborations*", NSF Trustworthy Computing, **\$41,769** (09/2009 - 08/2011)
24. PI, "*NSF Support for the 2009 New Security Paradigms Workshop Financial Aid*", NSF Trustworthy Computing, **\$10,000** (09/2009 - 08/2010)
25. PI, "*Measuring the Health of Internet Routing: A Longitudinal Study*", Google (research gift), **\$60,000** (07/2009)
26. PI, "*CSR: Small: An Information Accountability Architecture for Distributed Enterprise Systems*", NSF Trustworthy Computing, CNS-09-14312, **\$450,000** (07/2009 - 06/2012)
27. co-PI (with Jason Nieh), "*TC: Small: Exploiting Software Elasticity for Automatic Software Self-Healing*", NSF Trustworthy

28. co-PI (with Steve Bellovin and Sal Stolfo), "*Pro-actively Removing the Botnet Threat*", Office of Naval Research (ONR), **\$294,625** (04/2009 - 09/2010)
29. co-PI (with Simha Sethumadhavan and Sal Stolfo), "*SCOPS: Secure Cyber Operations and Parallelization Studies Cluster*", Air Force Office for Scientific Research (AFOSR), **\$650,000** (04/15/2009 - 04/14/2010)
30. PI (co-PIs: Sal Stolfo), "*Program Whitelisting, Vulnerability Analytics and Risk Assessment*", Symantec (research gift), **\$65,000** (12/2008)
31. co-PI (with Sal Stolfo), "*Automated Creation of Network and Content Traffic For the National Cyber Range*", DARPA/STO, **\$85,000** (01/01/2009 - 06/30/2011; part of a larger project)
32. co-PI (with Steve Bellovin, Tal Malkin, and Sal Stolfo), "*Secure Encrypted Search*", IARPA, **\$648,787** (09/2008 - 02/2010)
33. PI, "*Tracking Sensitive Information Flows in Modern Enterprises*", Intel (research gift), **\$64,000** (05/2008)
34. PI, "*Privacy and Search: Having it Both Ways in Web Services*", Google (research gift), **\$50,000** (03/2008)
35. PI (co-PI: Sal Stolfo), "*Continuation: Safe Browsing Through Web-based Application Communities*", Google (research gift), **\$50,000** (03/2008)
36. co-PI (with Steve Bellovin, Vishal Misra, Henning Schulzrinne, Dan Rubenstein, Nick Maxemchuck), "*Zero Outage Dynamic Intrinsically Assurable Communities (ZODIAC)*", DARPA/STO, **\$835,357** (11/2007 - 05/2009; part of a larger project with Telcordia, Sparta, GMU, and the University of Pennsylvania)
37. PI, "*Travel Supplement under the US/Japan Critical Infrastructure Protection Cooperation Program*", NSF CyberTrust, **\$38,640** (09/2007 - 08/2009)
38. PI, "*PacketSpread: Practical Network Capabilities*", NSF CyberTrust, CNS-07-14277, **\$280,000** (09/2007 - 08/2010)
39. PI, "*Integrated Enterprise Security Management*", NSF CyberTrust, CNS-07-14647, **\$286,486** (08/2007 - 07/2009)
40. PI, "*Safe Browsing Through Web-based Application Communities*", NY State/Polytechnic CAT, **\$25,000** (06/2007 - 06/2009)
41. PI, "*MURI: Foundational and Systems Support for Quantitative Trust Management*", Office of Naval Research (ONR), **\$750,000** (05/2007 - 04/2012; part of a larger project with the University of Pennsylvania and Georgia Institute of Technology)
42. PI (co-PIs: Jason Nieh, Sal Stolfo), "*MURI: Autonomic Recovery of Enterprise-Wide Systems After Attack or Failure with Forward Correction*", Air Force Office of Scientific Research (AFOSR), **\$1,368,000** (05/2007 - 04/2012; part of a larger project with GMU and Penn State University)
43. co-PI (with Sal Stolfo), "*Human Behavior, Insider Threat, and Awareness*", DHS/I3P, **\$616,442** (04/2007 - 03/2009)
44. PI (co-PI: Sal Stolfo), "*Safe Browsing Through Web-based Application Communities*", Google (research gift), **\$50,000** (01/2007)
45. PI (co-PI: Sal Stolfo), "*Supplement to Behavior-based Access Control and Communication in MANETs grant*", DARPA/IPTO and NRO, **\$96,627** (09/2006 - 07/2007)
46. PI, "*Secure Overlay Services*", NY State/Polytechnic CAT, **\$10,000** (09/2006 - 06/2007)
47. PI (co-PIs: Gail Kaiser, Sal Stolfo), "*Enabling Collaborative Self-healing Software Systems*", NSF CyberTrust, CNS-06-27473, **\$800,000** (09/2006 - 08/2010)
48. PI (co-PI: Sal Stolfo), "*Behavior-based Access Control and Communication in MANETs*", DARPA/IPTO, **\$100,000** (07/2006 - 06/2007)
49. co-PI (with Steve Bellovin and Sal Stolfo), "*Large-Scale System Defense*", DTO, **\$535,555** (07/2006 - 12/2007)
50. PI, "*Active Decoys for Spyware*", NY State/Polytechnic CAT, **\$25,000** (06/2006 - 12/2007)
51. PI, "*Retrofitting A Flow-oriented Paradigm in Commodity Operating Systems for High-Performance Computing*", NSF CPA, CCF-05-41093, **\$378,091** (01/2006 - 12/2008)
52. co-PI (with Jason Nieh, Gail Kaiser), "*Broadening Participation in Research*", NSF BPC, **\$133,565** (09/2005 - 08/2006)
53. PI, "*Secure Overlay Services*", NY State/Polytechnic CAT, **\$12,500** (09/2005 - 06/2006)
54. co-PI (with Dan Rubenstein, Vishal Misra), "*Secure Overlay Services*", Intel Corp. (research gift), **\$75,000** (08/2005)
55. PI, "*Snakeyes*", New York State Center for Advanced Technology, **\$14,999** (07/2005 - 06/2006)
56. PI, "*Self-protecting Software*", Columbia Science and Technology Ventures (research gift), **\$65,000** (06/2005 - 09/2005)
57. co-PI (with Gail Kaiser), "*Trustworthy Computing Curriculum Development*", Microsoft Research (research gift), **\$50,000** (12/2004 - 12/2005)
58. co-PI (with Jason Nieh, Gail Kaiser), "*Secure Remote Computing Services*", NSF ITR, CNS-04-26623, **\$1,200,000** (09/2004 - 08/2009)
59. PI, "*Secure Overlay Services*", NY State/Polytechnic CAT, **\$12,500** (09/2004 - 06/2005)
60. co-PI (with Dan Rubenstein, Vishal Misra), "*Secure Overlay Services*", Intel Corp. (research gift), **\$90,000** (06/2004)
61. co-PI (with Dan Rubenstein, Vishal Misra), "*Secure Overlay Services*", Intel Corp. (research gift), **\$120,000** (08/2003)
62. PI (co-PIs: Dan Rubenstein, Vishal Misra), "*Secure Overlay Services*", Cisco Corp. (research gift), **\$76,000** (07/2003)
63. co-PI (with Sal Stolfo, Tal Malkin, Vishal Misra), "*Distributed Intrusion Detection Feasibility Study*", Department of Defense, **\$300,000** (03/2003 - 03/2004)
64. PI, "*STRONGMAN*", DARPA/ATO, **\$23,782** (09/2002 - 08/2003; part of a larger project with the University of Pennsylvania)
65. PI, "*POSSE*", DARPA/ATO, **\$16,341** (09/2002 - 08/2003; part of a larger project with the University of Pennsylvania)
66. PI, "*GRIDLOCK*", NSF Trusted Computing, CCR-TC-02-08972, **\$207,000** (07/2002 - 06/2005; part of a larger project with the University of Pennsylvania and Yale University)
67. PI (co-PIs: Dan Rubenstein, Vishal Misra), "*Secure Overlay Services*", Cisco Corp. (research gift), **\$70,000** (07/2002)
68. PI (co-PIs: Dan Rubenstein, Vishal Misra), "*Secure Overlay Services*", DARPA/ATO, **\$695,000** (06/2002 - 05/2004)
69. PI, "*Code Security Analysis Kit (CoSAK)*", DARPA/ATO, **\$37,000** (07/2001 - 06/2003; part of a larger project with Drexel University)

- **Total:** \$39,859,220
- **Total as PI:** \$22,506,562

Select Recent Invited Talks

- "Automated Patch (-and-Pray?)", DARPA Cyber Forum II, Arlington, VA, November 2013.
- "Software Failure Recovery via Error Virtualization", Technical University of Braunschweig, Germany, October 2013.
- "Quo vadis cautela?", DARPA Cyber Forum, Arlington, VA, September 2013.
- "Computational Decoys for Cloud Security", ARO Workshop on Cloud Security, Fairfax, VA, March 2013.
- "A Decoy Substrate for Information Security", Applied Communication Sciences (ACS), Basking Ridge, NJ, March 2013.
- "A Decoy Substrate for Information Security", CyLab, Carnegie Mellon University, Pittsburgh, PA, January 2013.
- "Information Security via Large-scale Decoy Use", Department of Computer Science, Rice University, Houston, TX, September 2012.
- "Information Security via Large-scale Decoy Use", Cyber Infrastructure Protection (CIP) Conference, New York, NY, September 2012.
- "Evaluating a ROP Defense Mechanism", 2nd Experimental Security Panoramas for Critical System Protection (ESP-CSP) Workshop, Salt Lake City, UT, August 2012.
- "Cloud Security: Control or Misdirection?", Department of Computer Science, University of Calgary, Calgary, Canada, April 2012.
- "Active Defense in CyberSecurity", Distinguished Lecture Series, Institute for Security, Privacy, and Information Assurance (ISPIA), University of Calgary, Calgary, Canada, April 2012.
- "Future Directions in Cyber Security R&D", 1st Cyber Security Research Institute (CSRI) Invitational Workshop, Arlington, VA, April 2012.
- "REASSURE: A Self-contained Software Hardening and Self-healing Mechanism", Technical University Berlin, Germany, December 2011.
- "REASSURE: A Self-contained Software Hardening and Self-healing Mechanism", Computer Science Department, Georgetown University, Washington, DC, October 2011.

Publications

(Student co-authors are underlined.)

Patents

1. "Methods, media and systems for detecting anomalous program executions"
Salvatore J. Stolfo, **Angelos D. Keromytis**, and Stelios Sidiroglou. U.S. Patent Number 8,601,322. Issued on December 3rd, 2013.
2. "Methods, media and systems for responding to a denial of service attack"
Angelos Stavrou, **Angelos D. Keromytis**, Jason Nieh, Vishal Misra, and Daniel Rubenstein. U.S. Patent Number 8,549,646. Issued on October 1st, 2013.
3. "Methods, systems, and media for detecting covert malware"
Brian M. Bowen, Pratap V. Prabhu, Vasileios P. Kemerlis, Stylianos Sidiroglou, Salvatore J. Stolfo, and **Angelos D. Keromytis**. U.S. Patent Number 8,528,091. Issued on September 3rd, 2013.
4. "Systems, methods, and media for enforcing a security policy in a network including a plurality of components"
Matthew Burnside and **Angelos D. Keromytis**. U.S. Patent Number 8,516,575. Issued on August 20th, 2013.
5. "Methods, media, and systems for detecting an anomalous sequence of function calls"
Angelos D. Keromytis and Salvatore J. Stolfo. U.S. Patent Number 8,489,931. Issued on July 16th, 2013.
6. "Systems, methods, and media protecting a digital data processing device from attack"
Stylianos Sidiroglou, **Angelos D. Keromytis**, and Salvatore J. Stolfo. U.S. Patent Number 8,407,785. Issued on March 26th, 2013.
7. "Systems, methods, and media for generating sanitized data, sanitizing anomaly detection models, and/or generating sanitized anomaly detection models"
Gabriela Cretu, Angelos Stavrou, Salvatore J. Stolfo, **Angelos D. Keromytis**, and Michael E. Locasto. U.S. Patent Number 8,407,160. Issued on March 26th, 2013.
8. "Systems and methods for correlating and distributing intrusion alert information among collaborating computer systems"
Salvatore J. Stolfo, Tal Malkin, **Angelos D. Keromytis**, Vishal Misra, Michael Locasto, and Janak Parekh. U.S. Patent Number 8,381,295. Issued on February 19th, 2013.

9. "Systems and methods for computing data transmission characteristics of a network path based on single-ended measurements"
Angelos D. Keromytis, Sambuddho Chakravarty, and Angelos Stavrou. U.S. Patent Number 8,228,815. Issued on July 24th, 2012.
10. "Methods, media, and systems for detecting an anomalous sequence of function calls"
Angelos D. Keromytis and Salvatore J. Stolfo. U.S. Patent Number 8,135,994. Issued on March 13th, 2012.
11. "Methods, media and systems for detecting anomalous program executions"
Salvatore J. Stolfo, **Angelos D. Keromytis**, and Stelios Sidiroglou. U.S. Patent Number 8,074,115. Issued on December 6th, 2011.
12. "Microbilling using a trust management system"
Matthew A. Blaze, John Ioannidis, and **Angelos D. Keromytis**. U.S. Patent Number 7,996,325. Issued on August 9th, 2011.
13. "Methods, systems and media for software self-healing"
Michael E. Locasto, **Angelos D. Keromytis**, Salvatore J. Stolfo, Angelos Stavrou, Gabriela Cretu, Stylianios Sidiroglou, Jason Nieh, and Oren Laadan. U.S. Patent Number 7,962,798. Issued on June 14th, 2011.
14. "Systems and methods for detecting and inhibiting attacks using honeypots"
Stylianios Sidiroglou, **Angelos D. Keromytis**, and Kostas G. Anagnostakis. U.S. Patent Number 7,904,959. Issued on March 8th, 2011.
15. "Systems and methods for correlating and distributing intrusion alert information among collaborating computer systems"
Salvatore J. Stolfo, **Angelos D. Keromytis**, Vishal Misra, Michael Locasto, and Janak Parekh. U.S. Patent Number 7,784,097. Issued on August 24th, 2010.
16. "Systems and methods for correlating and distributing intrusion alert information among collaborating computer systems"
Salvatore J. Stolfo, Tal Malkin, **Angelos D. Keromytis**, Vishal Misra, Michael Locasto, and Janak Parekh. U.S. Patent Number 7,779,463. Issued on August 17th, 2010.
17. "Systems and methods for computing data transmission characteristics of a network path based on single-ended measurements"
Angelos D. Keromytis, Sambuddho Chakravarty, and Angelos Stavrou. U.S. Patent Number 7,660,261. Issued on February 9th, 2010.
18. "Microbilling using a trust management system"
Matthew A. Blaze, John Ioannidis, and **Angelos D. Keromytis**. U.S. Patent Number 7,650,313. Issued on January 19th, 2010.
19. "Methods and systems for repairing applications"
Angelos D. Keromytis, Michael E. Locasto, and Stylianios Sidiroglou. U.S. Patent Number 7,490,268. Issued on February 10th, 2009.
20. "System and method for microbilling using a trust management system"
Matthew A. Blaze, John Ioannidis, and **Angelos D. Keromytis**. U.S. Patent Number 6,789,068. Issued on September 7th, 2004.
21. "Secure and reliable bootstrap architecture"
William A. Arbaugh, David J. Farber, Angelos D. Keromytis, and Jonathan M. Smith. U.S. Patent Number 6,185,678. Issued on February 6th, 2001.

Journal Publications

1. "[Privacy Policy-driven Mashups](#)"
Soon Ae Chun, Janice Warner, and **Angelos D. Keromytis**. To appear in the *International Journal of Business Continuity and Risk Management (IJBCRM)*.
2. "[kGuard: Lightweight Kernel Protection](#)"
Vasileios P. Kemerlis, Georgios Portokalidis, Elias Athanasopoulos, and **Angelos D. Keromytis**. In the *USENIX ;login: Magazine*, vol. 37, no. 6, pp. 7 - 14. December 2012.
3. "[A System for Generating and Injecting Indistinguishable Network Decoys](#)"
Brian M. Bowen, Vasileios P. Kemerlis, Pratap Prabhu, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In the *Journal of Computer Security (JCS)*, vol. 20, no. 2 - 3, pp. 199 - 221, June 2012.

4. "[A Comprehensive Survey of Voice over IP Security Research](#)"
Angelos D. Keromytis. In the *IEEE Communications Surveys and Tutorials*, vol. 14, no. 2, pp. 514 - 537, May 2012.
5. "[The Efficient Dual Receiver Cryptosystem and Its Applications](#)"
Ted Diamant, **Homin K. Lee**, **Angelos D. Keromytis**, and Moti Yung. In the *International Journal of Network Security (IJNS)*, vol. 13, no. 3, pp. 135 - 151, November 2011.
6. "[On the Infeasibility of Modeling Polymorphic Shellcode: Re-thinking the Role of Learning in Intrusion Detection Systems](#)"
Yingbo Song, Michael E. Locasto, Angelos Stavrou, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In the *Machine Learning Journal (MLJ)*, vol. 81, no. 2, pp. 179 - 205, November 2010.
7. "[On The General Applicability of Instruction-Set Randomization](#)"
Stephen W. Boyd, **Gaurav S. Kc**, **Michael E. Locasto**, **Angelos D. Keromytis**, and Vassilis Prevelakis. In the *IEEE Transactions on Dependable and Secure Computing (TDSC)*, vol. 7, no. 3, pp. 255 - 270, July - September 2010.
8. "[Shadow Honeypots](#)"
Michalis Polychronakis, **Periklis Akritidis**, Stelios Sidiroglou, Kostas G. Anagnostakis, **Angelos D. Keromytis**, and Evangelos P. Markatos. In the *International Journal of Computer and Network Security (IJCNS)*, vol. 2, no. 9, pp. 1 - 15, September 2010.
9. "[Ethics in Security Vulnerability Research](#)"
Andrea M. Matwyshyn, **Ang Cui**, Salvatore J. Stolfo, and **Angelos D. Keromytis**. In the *IEEE Security & Privacy Magazine*, vol. 8, no. 2, pp. 67 - 72, March/April 2010.
10. "[Voice over IP Security: Research and Practice](#)"
Angelos D. Keromytis. In the *IEEE Security & Privacy Magazine*, vol. 8, no. 2, pp. 76 - 78, March/April 2010.
11. "[A Market-based Bandwidth Charging Framework](#)"
David Michael Turner, Vassilis Prevelakis, and **Angelos D. Keromytis**. In the *ACM Transactions on Internet Technology (ToIT)*, vol. 10, no. 1, pp. 1 - 30, February 2010.
12. "[A Look at VoIP Vulnerabilities](#)"
Angelos D. Keromytis. In the *USENIX ;login: Magazine*, vol. 35, no. 1, pp. 41 - 50, February 2010.
13. "[Designing Host and Network Sensors to Mitigate the Insider Threat](#)"
Brian M. Bowen, **Malek Ben Salem**, Shlomo Hershkop, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In the *IEEE Security & Privacy Magazine*, vol. 7, no. 6, pp. 22 - 29, November/December 2009.
14. "[Elastic Block Ciphers: Method, Security and Instantiations](#)"
Debra L. Cook, Moti Yung, and **Angelos D. Keromytis**. In the *Springer International Journal of Information Security (IJIS)*, vol 8, no. 3, pp. 211 - 231, June 2009.
15. "[On the Deployment of Dynamic Taint Analysis for Application Communities](#)"
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1. ["On the Effectiveness of Traffic Analysis Against Anonymity Networks Using Flow Records"](#)
Sambuddho Chakravarty, Marco V. Barbera, Georgios Portokalidis, Michalis Polychronakis, and **Angelos D. Keromytis**. To appear in the Proceedings of the 15th Passive and Active Measurement Conference (PAM). March 2014, Los Angeles, CA. (Acceptance rate: 31.5%)
2. ["SAuth: Protecting User Accounts from Password Database Leaks"](#)
George Kontaxis, Elias Athanasopoulos, Georgios Portokalidis, and **Angelos D. Keromytis**. In Proceedings of the 20th ACM Conference on Computer and Communications Security (CCS), pp. 187 - 198. November 2013, Berlin, Germany. (Acceptance rate: 19.8%)
3. ["ShadowReplica: Efficient Parallelization of Dynamic Data Flow Tracking"](#)
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4. ["CloudFence: Data Flow Tracking as a Cloud Service"](#)
Vasilis Pappas, Vasileios P. Kemerlis, Angeliki Zavou, Michalis Polychronakis, and **Angelos D. Keromytis**. In Proceedings of the 16th International Symposium on Recent Advances in Intrusion Detection (RAID), pp. 411 - 431. October 2013, Saint Lucia. (Acceptance rate: 23%)
5. ["An Accurate Stack Memory Abstraction and Symbolic Analysis Framework for Executables"](#)
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6. ["CellFlood: Attacking Tor Onion Routers on the Cheap"](#)
Marco Valerio Barbera, Vasileios P. Kemerlis, Vasilis Pappas, and **Angelos D. Keromytis**. In Proceedings of the 18th European Symposium on Research in Computer Security (ESORICS), pp. 664 - 681. September 2013, Egham, UK. (Acceptance rate: 18%)

7. [*"A Privacy-Preserving Entropy-Driven Framework for Tracing DoS Attacks in VoIP"*](#)
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8. [*"Transparent ROP Exploit Mitigation using Indirect Branch Tracing"*](#)
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9. [*"Cloudopsy: an Autopsy of Data Flows in the Cloud"*](#)
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10. [*"SecureGov: Secure Government Data Sharing"*](#)
Jong Uk Choi, Soon Ae Chun, Dong Hwa Kim, and **Angelos D. Keromytis**. In Proceedings of the 14th Annual International Conference on Digital Government Research (dg.o), pp. 127 - 135. June 2013, Quebec City, Canada.
11. [*"Bait and Snitch: Defending Computer Systems with Decoys"*](#)
Jonathan Voris, Jill Jermyn, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In Proceedings (electronic) of the Cyber Infrastructure Protection (CIP) Conference. September 2012, New York, NY. (Invited paper)
12. [*"All Your Face Are Belong to Us: Breaking Facebook's Social Authentication"*](#)
Iasonas Polakis, Marco Lancini, George Kontaxis, Federico Maggi, Sotiris Ioannidis, **Angelos D. Keromytis**, and Stefano Zanero. In Proceedings of the 28th Annual Computer Security Applications Conference (ACSAC), pp. 399 - 408. December 2012, Orlando, FL. (Acceptance rate: 19%)
13. [*"Self-healing Multitier Architectures Using Cascading Rescue Points"*](#)
Angelika Zavou, Georgios Portokalidis, and **Angelos D. Keromytis**. In Proceedings of the 28th Annual Computer Security Applications Conference (ACSAC), pp. 379 - 388. December 2012, Orlando, FL. (Acceptance rate: 19%)
14. [*"Adaptive Defenses for Commodity Software Through Virtual Application Partitioning"*](#)
Dimitris Geneiatakis, Georgios Portokalidis, Vasileios P. Kemerlis, and **Angelos D. Keromytis**. In Proceedings of the 19th ACM Conference on Computer and Communications Security (CCS), pp. 133 - 144. October 2012, Raleigh, NC. (Acceptance rate: 18.9%)
15. [*"Privacy-Preserving Social Plugins"*](#)
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16. [*"kGuard: Lightweight Kernel Protection against Return-to-user Attacks"*](#)
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17. [*"Towards a Universal Data Provenance Framework using Dynamic Instrumentation"*](#)
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18. [*"Smashing the Gadgets: Hindering Return-Oriented Programming Using In-Place Code Randomization"*](#)
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19. [*"libdft: Practical Dynamic Data Flow Tracking for Commodity Systems"*](#)
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20. [*"A General Approach for Efficiently Accelerating Software-based Dynamic Data Flow Tracking on Commodity Hardware"*](#)
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21. *"A Multi-layer Overlay Network Architecture for Enhancing IP Services Availability Against DDoS"*
Dimitris Geneiatakis, Georgios Portokalidis, and **Angelos D. Keromytis**. In Proceedings of the 7th International Conference on Information Systems Security (ICISS), pp. 322 - 336. December 2011, Kolkata, India. (Acceptance rate: 22.8%)
22. *"ROP Payload Detection Using Speculative Code Execution"*
Michalis Polychronakis and **Angelos D. Keromytis**. In Proceedings of the 6th International Conference on Malicious and Unwanted Software (MALWARE), pp. 58 - 65. October 2011, Fajardo, PR. (**Best Paper Award**)
23. *"Detecting Traffic Snooping in Tor Using Decoys"*
Sambuddho Chakravarty, Georgios Portokalidis, Michalis Polychronakis, and **Angelos D. Keromytis**. In Proceedings of the 14th International Symposium on Recent Advances in Intrusion Detection (RAID), pp. 222 - 241. September 2011, Menlo Park, CA. (Acceptance rate: 23%)
24. *"Measuring the Deployment Hiccups of DNSSEC"*
Vasilis Pappas and **Angelos D. Keromytis**. In Proceedings of the International Conference on Advances in Computing and Communications (ACC), Part III, pp. 44 - 54. July 2011, Kochi, India. (Acceptance rate: 39%)
25. *"Misuse Detection in Consent-based Networks"*
Mansoor Alicherry and **Angelos D. Keromytis**. In Proceedings of the 9th International Conference on Applied Cryptography and Network Security (ACNS), pp. 38 - 56. June 2011, Malaga, Spain. (Acceptance rate: 18%)
26. *"Retrofitting Security in COTS Software with Binary Rewriting"*
Padraig O'Sullivan, Kapil Anand, Aparna Kothan, Matthew Smithson, Rajeev Barua, and **Angelos D. Keromytis**. In Proceedings of the 26th IFIP International Information Security Conference (SEC), pp. 154 - 172. June 2011, Lucerne, Switzerland. (Acceptance rate: 24%)
27. *"Fast and Practical Instruction-Set Randomization for Commodity Systems"*
Georgios Portokalidis and **Angelos D. Keromytis**. In Proceedings of the 26th Annual Computer Security Applications Conference (ACSAC), pp. 41 - 48. December 2010, Austin, TX. (Acceptance rate: 17%)
28. *"An Adversarial Evaluation of Network Signaling and Control Mechanisms"*
Kangkook Jee, Stelios Sidiroglou-Douskos, Angelos Stavrou, and **Angelos D. Keromytis**. In Proceedings of the 13th International Conference on Information Security and Cryptology (ICISC). December 2010, Seoul, Korea.
29. *"Evaluation of a Spyware Detection System using Thin Client Computing"*
Vasilis Pappas, Brian M. Bowen, and **Angelos D. Keromytis**. In Proceedings of the 13th International Conference on Information Security and Cryptology (ICISC), pp. 222 - 232. December 2010, Seoul, Korea.
30. *"Crimeware Swindling without Virtual Machines"*
Vasilis Pappas, Brian M. Bowen, and **Angelos D. Keromytis**. In Proceedings of the 13th Information Security Conference (ISC), pp. 196 - 202. October 2010, Boca Raton, FL. (Acceptance rate: 27.6%)
31. *"iLeak: A Lightweight System for Detecting Inadvertent Information Leaks"*
Vasileios P. Kemerlis, Vasilis Pappas, Georgios Portokalidis, and **Angelos D. Keromytis**. In Proceedings of the 6th European Conference on Computer Network Defense (EC2ND), pp. 21 - 28. October 2010, Berlin, Germany.
32. *"Traffic Analysis Against Low-Latency Anonymity Networks Using Available Bandwidth Estimation"*
Sambuddho Chakravarty, Angelos Stavrou, and **Angelos D. Keromytis**. In Proceedings of the 15th European Symposium on Research in Computer Security (ESORICS), pp. 249 - 267. September 2010, Athens, Greece. (Acceptance rate: 20%)
33. *"BotSwindler: Tamper Resistant Injection of Believable Decoys in VM-Based Hosts for Crimeware Detection"*
Brian M. Bowen, Pratap Prabhu, Vasileios P. Kemerlis, Stelios Sidiroglou, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In Proceedings of the 13th International Symposium on Recent Advances in Intrusion Detection (RAID), pp. 118 - 137. September 2010, Ottawa, Canada. (Acceptance rate: 23.5%)
34. *"An Analysis of Rogue AV Campaigns"*
Marco Cova, Corrado Leita, Olivier Thonnard, **Angelos D. Keromytis**, and Marc Dacier. In Proceedings of the 13th International Symposium on Recent Advances in Intrusion Detection (RAID), pp. 442 - 463. September 2010, Ottawa, Canada. (Acceptance rate: 23.5%)
35. *"DIPLOMA: Distributed Policy Enforcement Architecture for MANETs"*
Mansoor Alicherry and **Angelos D. Keromytis**. In Proceedings of the 4th International Conference on Network and System Security (NSS), pp. 89 - 98. September 2010, Melbourne, Australia. (Acceptance rate: 26%)

36. *"Automating the Injection of Believable Decoys to Detect Snooping" (Short Paper)*
Brian M. Bowen, Vasileios Kemerlis, Pratap Prabhu, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In Proceedings of the 3rd ACM Conference on Wireless Network Security (WiSec), pp. 81 - 86. March 2010, Hoboken, NJ. (Acceptance rate: 21%)
37. *"BARTER: Behavior Profile Exchange for Behavior-Based Admission and Access Control in MANETs"*
Vanessa Frias-Martinez, Salvatore J. Stolfo, and **Angelos D. Keromytis**. In Proceedings of the 5th International Conference on Information Systems Security (ICISS), pp. 193 - 207. December 2009, Kolkata, India. (Acceptance rate: 19.8%)
38. *"A Survey of Voice Over IP Security Research"*
Angelos D. Keromytis. In Proceedings of the 5th International Conference on Information Systems Security (ICISS), pp. 1 - 17. December 2009, Kolkata, India. (Invited paper)
39. *"A Network Access Control Mechanism Based on Behavior Profiles"*
Vanessa Frias-Martinez, Joseph Sherrick, Salvatore J. Stolfo, and **Angelos D. Keromytis**. In Proceedings of the 25th Annual Computer Security Applications Conference (ACSAC), pp. 3 - 12. December 2009, Honolulu, HI. (Acceptance rate: 20%)
40. *"Gone Rogue: An Analysis of Rogue Security Software Campaigns"*
Marco Cova, Corrado Leita, Olivier Thonnard, **Angelos D. Keromytis**, and Marc Dacier. In Proceedings of the 5th European Conference on Computer Network Defense (EC2ND), pp. 1 - 3. November 2009, Milan, Italy. (Invited paper)
41. *"Baiting Inside Attackers Using Decoy Documents"*
Brian M. Bowen, Shlomo Hershkop, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In Proceedings of the 5th International ICST Conference on Security and Privacy in Communication Networks (SecureComm), pp. 51 - 70. September 2009, Athens, Greece. (Acceptance rate: 25.3%)
42. *"Deny-by-Default Distributed Security Policy Enforcement in Mobile Ad Hoc Networks (Short Paper)"*
Mansoor Alicherry, **Angelos D. Keromytis**, and Angelos Stavrou. In Proceedings of the 5th International ICST Conference on Security and Privacy in Communication Networks (SecureComm), pp. 41 - 50. September 2009, Athens, Greece. (Acceptance rate: 34.7%)
43. *"Adding Trust to P2P Distribution of Paid Content"*
Alex Sherman, Angelos Stavrou, Jason Nieh, **Angelos D. Keromytis**, and Clifford Stein. In Proceedings of the 12th Information Security Conference (ISC), pp. 459 - 474. September 2009, Pisa, Italy. (Acceptance rate: 27.6%)
44. *"A2M: Access-Assured Mobile Desktop Computing"*
 Angelos Stavrou, Ricardo A. Baratto, **Angelos D. Keromytis**, and Jason Nieh. In Proceedings of the 12th Information Security Conference (ISC), pp. 186 - 201. September 2009, Pisa, Italy. (Acceptance rate: 27.6%)
45. *"F3ildCrypt: End-to-End Protection of Sensitive Information in Web Services"*
Matthew Burnside and **Angelos D. Keromytis**. In Proceedings of the 12th Information Security Conference (ISC), pp. 491 - 506. September 2009, Pisa, Italy. (Acceptance rate: 27.6%)
46. *"DoubleCheck: Multi-path Verification Against Man-in-the-Middle Attacks"*
Mansoor Alicherry and **Angelos D. Keromytis**. In Proceedings of the IEEE Symposium on Computers and Communications (ISCC), pp. 557 - 563. July 2009, Sousse, Tunisia. (Acceptance rate: 36%)
47. *"Voice over IP: Risks, Threats and Vulnerabilities"*
Angelos D. Keromytis. In Proceedings (electronic) of the Cyber Infrastructure Protection (CIP) Conference. June 2009, New York, NY. (Invited paper)
48. *"Capturing Information Flow with Concatenated Dynamic Taint Analysis"*
 Hyung Chan Kim, **Angelos D. Keromytis**, Michael Covington, and Ravi Sahita. In Proceedings of the 4th International Conference on Availability, Reliability and Security (ARES), pp. 355 - 362. March 2009, Fukuoka, Japan. (Acceptance rate: 25%)
49. *"ASSURE: Automatic Software Self-healing Using REScue points"*
Stelios Sidiropoulos, Oren Laadan, Nico Viennot, Carlos-René Pérez, **Angelos D. Keromytis**, and Jason Nieh. In Proceedings of the 14th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), pp. 37 - 48. March 2009, Washington, DC. (Acceptance rate: 25.6%)
50. *"Spectrogram: A Mixture-of-Markov-Chains Model for Anomaly Detection in Web Traffic"*
Yingbo Song, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In Proceedings of the 16th Internet Society (ISOC) Symposium on Network and Distributed Systems Security (SNDSS), pp. 121 - 135. February 2009, San Diego, CA. (Acceptance rate: 11.7%)

51. ["Constructing Variable Length PRPs and SP-RPs from Fixed Length PRPs"](#)
Debra L. Cook, Moti Yung, and **Angelos D. Keromytis**. In Proceedings of the 4th International Conference on Information Security and Cryptology (Inscrypt), pp. 157 - 180. December 2008, Beijing, China. (Acceptance rate: 17.5%)
52. ["Behavior-Profile Clustering for False Alert Reduction in Anomaly Detection Sensors"](#)
Vanessa Frias-Martinez, Salvatore J. Stolfo, and **Angelos D. Keromytis**. In Proceedings of the 24th Annual Computer Security Applications Conference (ACSAC), pp. 367 - 376. December 2008, Anaheim, CA. (Acceptance rate: 24.2%)
53. ["Authentication on Untrusted Remote Hosts with Public-key Sudo"](#)
Matthew Burnside, Mack Lu, and **Angelos D. Keromytis**. In Proceedings of the 22nd USENIX Large Installation Systems Administration (LISA) Conference, pp. 103 - 107. November 2008, San Diego, CA.
54. ["Behavior-Based Network Access Control: A Proof-of-Concept"](#)
Vanessa Frias-Martinez, Salvatore J. Stolfo, and **Angelos D. Keromytis**. In Proceedings of the 11th Information Security Conference (ISC), pp. 175 - 190. Taipei, Taiwan, September 2008. (Acceptance rate: 23.9%)
55. ["Path-based Access Control for Enterprise Networks"](#)
Matthew Burnside and **Angelos D. Keromytis**. In Proceedings of the 11th Information Security Conference (ISC), pp. 191 - 203. Taipei, Taiwan, September 2008. (Acceptance rate: 23.9%)
56. ["Methods for Linear and Differential Cryptanalysis of Elastic Block Ciphers"](#)
Debra L. Cook, Moti Yung, and **Angelos D. Keromytis**. In Proceedings of the 13th Australasian Conference on Information Security and Privacy (ACISP), pp. 187 - 202. July 2008, Wollongong, Australia. (Acceptance rate: 29.7%)
57. ["Pushback for Overlay Networks: Protecting against Malicious Insiders"](#)
Angelos Stavrou, Michael E. Locasto, and **Angelos D. Keromytis**. In Proceedings of the 6th International Conference on Applied Cryptography and Network Security (ACNS), pp 39 - 54. June 2008, New York, NY. (Acceptance rate: 22.9%)
58. ["Casting out Demons: Sanitizing Training Data for Anomaly Sensors"](#)
Gabriela F. Cretu, Angelos Stavrou, Michael E. Locasto, Salvatore J. Stolfo, and **Angelos D. Keromytis**. In Proceedings of the IEEE Symposium on Security & Privacy (S&P), pp. 81 - 95. May 2008, Oakland, CA. (Acceptance rate: 11.2%)
59. ["Taming the Devil: Techniques for Evaluating Anonymized Network Data"](#)
Scott E. Coull, Charles V. Wright, **Angelos D. Keromytis**, Fabian Monrose, and Michael K. Reiter. In Proceedings of the 15th Internet Society (ISOC) Symposium on Network and Distributed Systems Security (SNDSS), pp. 125 - 135. February 2008, San Diego, CA. (Acceptance rate: 17.8%)
60. ["SSARES: Secure Searchable Automated Remote Email Storage"](#)
Adam J. Aviv, Michael E. Locasto, Shaya Potter, and **Angelos D. Keromytis**. In Proceedings of the 23rd Annual Computer Security Applications Conference (ACSAC), pp. 129 - 138. December 2007, Miami Beach, FL. (Acceptance rate: 22%)
61. ["On the Infeasibility of Modeling Polymorphic Shellcode"](#)
Yingbo Song, Michael E. Locasto, Angelos Stavrou, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In Proceedings of the 14th ACM Conference on Computer and Communications Security (CCS), pp. 541 - 551. October/November 2007, Alexandria, VA. (Acceptance rate: 18.1%)
62. ["Defending Against Next Generation Attacks Through Network/Endpoint Collaboration and Interaction"](#)
Spiros Antonatos, Michael E. Locasto, Stelios Sidiropoulos, **Angelos D. Keromytis**, and Evangelos P. Markatos. In Proceedings of the 3rd European Conference on Computer Network Defense (EC2ND). October 2007, Heracilion, Greece. (Invited paper)
63. ["Elastic Block Ciphers in Practice: Constructions and Modes of Encryption"](#)
Debra L. Cook, Moti Yung, and **Angelos D. Keromytis**. In Proceedings of the 3rd European Conference on Computer Network Defense (EC2ND). October 2007, Heracilion, Greece.
64. ["The Security of Elastic Block Ciphers Against Key-Recovery Attacks"](#)
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65. ["Characterizing Self-healing Software Systems"](#)
Angelos D. Keromytis. In Proceedings of the 4th International Conference on Mathematical Methods, Models and Architectures for Computer Networks Security (MMM-ACNS), pp. 22 - 33. September 2007, St. Petersburg, Russia. (Invited paper)

66. *"A Study of Malware-Bearing Documents"*
Wei-Jen Li, Salvatore J. Stolfo, Angelos Stavrou, Elli Androulaki, and **Angelos D. Keromytis**. In Proceedings of the 4th GI International Conference on Detection of Intrusions & Malware, and Vulnerability Assessment (DIMVA), pp. 231 - 250. July 2007, Lucerne, Switzerland. (Acceptance rate: 21%)
67. *"From STEM to SEAD: Speculative Execution for Automated Defense"*
Michael E. Locasto, Angelos Stavrou, Gabriela F. Cretu, and **Angelos D. Keromytis**. In Proceedings of the USENIX Annual Technical Conference, pp. 219 - 232. June 2007, Santa Clara, CA. (Acceptance rate: 18.75%)
68. *"Using Rescue Points to Navigate Software Recovery (Short Paper)"*
Stelios Sidiroglou, Oren Laadan, **Angelos D. Keromytis**, and Jason Nieh. In Proceedings of the IEEE Symposium on Security & Privacy (S&P), pp. 273 - 278. May 2007, Oakland, CA. (Acceptance rate: 8.3%)
69. *"Mediated Overlay Services (MOSES): Network Security as a Composable Service"*
Stelios Sidiroglou, Angelos Stavrou, and **Angelos D. Keromytis**. In Proceedings of the IEEE Sarnoff Symposium. May 2007, Princeton, NJ. (Invited paper)
70. *"Elastic Block Ciphers: The Basic Design"*
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71. *"Robust Reactions to Potential Day-Zero Worms through Cooperation and Validation"*
Kostas G. Anagnostakis, Michael B. Greenwald, Sotiris Ioannidis, and **Angelos D. Keromytis**. In Proceedings of the 9th Information Security Conference (ISC), pp. 427 - 442. August/September 2006, Samos, Greece. (Acceptance rate: 20.2%)
72. *"Low Latency Anonymity with Mix Rings"*
Matthew Burnside and **Angelos D. Keromytis**. In Proceedings of the 9th Information Security Conference (ISC), pp. 32 - 45. August/September 2006, Samos, Greece. (Acceptance rate: 20.2%)
73. *"W3Bcrypt: Encryption as a Stylesheet"*
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74. *"Software Self-Healing Using Collaborative Application Communities"*
Michael E. Locasto, Stelios Sidiroglou, and **Angelos D. Keromytis**. In Proceedings of the 13th Internet Society (ISOC) Symposium on Network and Distributed Systems Security (SNDSS), pp. 95 - 106. February 2006, San Diego, CA. (Acceptance rate: 13.6%)
75. *"Remotely Keyed Cryptographics: Secure Remote Display Access Using (Mostly) Untrusted Hardware"*
Debra L. Cook, Ricardo A. Baratto, and **Angelos D. Keromytis**. In Proceedings of the 7th International Conference on Information and Communications Security (ICICS), pp. 363 - 375. December 2005, Beijing, China. (Acceptance rate: 17.4%)
76. *"e-NeXSh: Achieving an Effectively Non-Executable Stack and Heap via System-Call Policing"*
Gaurav S. Kc and **Angelos D. Keromytis**. In Proceedings of the 21st Annual Computer Security Applications Conference (ACSAC), pp. 259 - 273. December 2005, Tucson, AZ. (Acceptance rate: 19.6%)
77. *"Action Amplification: A New Approach To Scalable Administration"*
Kostas G. Anagnostakis and **Angelos D. Keromytis**. In Proceedings of the 13th IEEE International Conference on Networks (ICON), vol. 2, pp. 862 - 867. November 2005, Kuala Lumpur, Malaysia.
78. *"A Repeater Encryption Unit for IPv4 and IPv6"*
Norimitsu Nagashima and **Angelos D. Keromytis**. In Proceedings of the 13th IEEE International Conference on Networks (ICON), vol. 1, pp. 335 - 340. November 2005, Kuala Lumpur, Malaysia.
79. *"Countering DoS Attacks With Stateless Multipath Overlays"*
Angelos Stavrou and **Angelos D. Keromytis**. In Proceedings of the 12th ACM Conference on Computer and Communications Security (CCS), pp. 249 - 259. November 2005, Alexandria, VA. (Acceptance rate: 15.2%)
80. *"A Dynamic Mechanism for Recovering from Buffer Overflow Attacks"*
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81. *"gore: Routing-Assisted Defense Against DDoS Attacks"*

82. *"FLIPS: Hybrid Adaptive Intrusion Prevention"*
Michael E. Locasto, Ke Wang, Angelos D. Keromytis, and Salvatore J. Stolfo. In Proceedings of the 8th International Symposium on Recent Advances in Intrusion Detection (RAID), pp. 82 - 101. September 2005, Seattle, WA. (Acceptance rate: 20.4%)
83. *"Detecting Targeted Attacks Using Shadow Honeypots"*
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84. *"The Bandwidth Exchange Architecture"*
David Michael Turner, Vassilis Prevelakis, and **Angelos D. Keromytis**. In Proceedings of the 10th IEEE Symposium on Computers and Communications (ISCC), pp. 939 - 944. June 2005, Cartagena, Spain.
85. *"An Email Worm Vaccine Architecture"*
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86. *"Building a Reactive Immune System for Software Services"*
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87. *"Conversion and Proxy Functions for Symmetric Key Ciphers"*
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88. *"The Effect of DNS Delays on Worm Propagation in an IPv6 Internet"*
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89. *"MOVE: An End-to-End Solution To Network Denial of Service"*
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90. *"CryptoGraphics: Secret Key Cryptography Using Graphics Cards"*
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91. *"The Dual Receiver Cryptogram and Its Applications"*
Ted Diamant, Homin K. Lee, Angelos D. Keromytis, and Moti Yung. In Proceedings of the 11th ACM Conference on Computer and Communications Security (CCS), pp. 330 - 343. October 2004, Washington, DC. (Acceptance rate: 13.9%)
92. *"Hydan: Hiding Information in Program Binaries"*
Rakan El-Khalil and **Angelos D. Keromytis**. In Proceedings of the 6th International Conference on Information and Communications Security (ICICS), pp. 187 - 199. October 2004, Malaga, Spain. (Acceptance rate: 16.9%)
93. *"Recursive Sandboxes: Extending Systrace To Empower Applications"*
Aleksey Kurchuk and **Angelos D. Keromytis**. In Proceedings of the 19th IFIP International Information Security Conference (SEC), pp. 473 - 487. August 2004, Toulouse, France. (Acceptance rate: 22%)
94. *"SQLrand: Preventing SQL Injection Attacks"*
Stephen W. Boyd and **Angelos D. Keromytis**. In Proceedings of the 2nd International Conference on Applied Cryptography and Network Security (ACNS), pp. 292 - 302. June 2004, Yellow Mountain, China. (Acceptance rate: 12.1%)
95. *"CamouflageFS: Increasing the Effective Key Length in Cryptographic Filesystems on the Cheap"*
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96. *"A Pay-per-Use DoS Protection Mechanism For The Web"*
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97. *"Dealing with System Monocultures"*
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98. *"Managing Access Control in Large Scale Heterogeneous Networks"*
Angelos D. Keromytis, Kostas G. Anagnostakis, Sotiris Ioannidis, Michael Greenwald, and Jonathan M. Smith. In Proceedings (electronic) of the *NATO NC3A Symposium on Interoperable Networks for Secure Communications (INSC)*. November 2003, The Hague, Netherlands.
99. *"Countering Code-Injection Attacks With Instruction-Set Randomization"*
Gaurav S. Kc, **Angelos D. Keromytis**, and Vassilis Prevelakis. In Proceedings of the *10th ACM International Conference on Computer and Communications Security (CCS)*, pp. 272 - 280. October 2003, Washington, DC. (Acceptance rate: 13.8%) (*ACM CCS 2013 Test of Time Award*)
100. *"Using Graphic Turing Tests to Counter Automated DDoS Attacks Against Web Servers"*
William G. Morein, Angelos Stavrou, Debra L. Cook, **Angelos D. Keromytis**, Vishal Misra, and Dan Rubenstein. In Proceedings of the *10th ACM International Conference on Computer and Communications Security (CCS)*, pp. 8 - 19. October 2003, Washington, DC. (Acceptance rate: 13.8%)
101. *"EasyVPN: IPsec Remote Access Made Easy"*
Mark C. Benvenuto and **Angelos D. Keromytis**. In Proceedings of the *17th USENIX Large Installation Systems Administration (LISA) Conference*, pp. 87 - 93. October 2003, San Diego, CA. (Acceptance rate: 25%)
102. *"A Cooperative Immunization System for an Untrusting Internet"*
Kostas G. Anagnostakis, Michael B. Greenwald, Sotiris Ioannidis, **Angelos D. Keromytis**, and Dekai Li. In Proceedings of the *11th IEEE International Conference on Networks (ICON)*, pp. 403 - 408. September/October 2003, Sydney, Australia.
103. *"Accelerating Application-Level Security Protocols"*
Matthew Burnside and **Angelos D. Keromytis**. In Proceedings of the *11th IEEE International Conference on Networks (ICON)*, pp. 313 - 318. September/October 2003, Sydney, Australia.
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106. *"Tagging Data In The Network Stack: mbuf_tags"*
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107. *"The Design of the OpenBSD Cryptographic Framework"*
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109. *"Experience with the KeyNote Trust Management System: Applications and Future Directions"*
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110. *"The STRONGMAN Architecture"*
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111. *"Efficient, DoS-Resistant, Secure Key Exchange for Internet Protocols"*
 William Aiello, Steven M. Bellovin, Matt Blaze, Ran Canetti, John Ioannidis, **Angelos D. Keromytis**, and Omer Reingold. In

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Angelos D. Keromytis, Vishal Misra, and Dan Rubenstein. In Proceedings of the *ACM SIGCOMM Conference*, pp. 61 - 72. August 2002, Pittsburgh, PA. Also available through the *ACM Computer Communications Review (SIGCOMM Proceedings)*, vol. 32, no. 4, October 2002. (Acceptance rate: 8.3%)
113. [*"Using Overlays to Improve Network Security"*](#)
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114. [*"Designing an Embedded Firewall/VPN Gateway"*](#)
 Vassilis Prevelakis and **Angelos D. Keromytis**. In Proceedings of the *International Network Conference (INC)*, pp. 313 - 322. July 2002, Plymouth, England. (**Best Paper Award**)
115. [*"A Study of the Relative Costs of Network Security Protocols"*](#)
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Michael W. Hicks, **Angelos D. Keromytis**, and Jonathan M. Smith. In Proceedings of the *DARPA Active Networks Conference and Exposition (DANCE)*, pp. 224 - 237. May 2002, San Francisco, CA. (Extended version of the paper IWAN 1999 paper.)
117. [*"Fileteller: Paying and Getting Paid for File Storage"*](#)
 John Ioannidis, Sotiris Ioannidis, **Angelos D. Keromytis**, and Vassilis Prevelakis. In Proceedings of the 6th *Financial Cryptography (FC) Conference*, pp. 282 - 299. March 2002, Bermuda. (Acceptance rate: 25.6%)
118. [*"Offline Micropayments without Trusted Hardware"*](#)
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119. [*"Trust Management for IPsec"*](#)
 Matt Blaze, John Ioannidis, and **Angelos D. Keromytis**. In Proceedings of the 8th *Internet Society (ISOC) Symposium on Network and Distributed Systems Security (SNDSS)*, pp. 139 - 151. February 2001, San Diego, CA. (Acceptance rate: 24%)
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Sotiris Ioannidis, **Angelos D. Keromytis**, Steven M. Bellovin, and Jonathan M. Smith. In Proceedings of the 7th *ACM International Conference on Computer and Communications Security (CCS)*, pp. 190 - 199. November 2000, Athens, Greece. (Acceptance rate: 21.4%)
121. [*"Implementing Internet Key Exchange \(IKE\)"*](#)
 Niklas Hallqvist and **Angelos D. Keromytis**. In Proceedings of the *USENIX Annual Technical Conference, Freenix Track*, pp. 201 - 214. June 2000, San Diego, CA.
122. [*"Transparent Network Security Policy Enforcement"*](#)
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123. [*"Cryptography in OpenBSD: An Overview"*](#)
 Theo de Raadt, Niklas Hallqvist, Artur Grabowski, **Angelos D. Keromytis**, and Niels Provos. In Proceedings of the *USENIX Annual Technical Conference, Freenix Track*, pp. 93 - 101. June 1999, Monterey, CA.
124. [*"DHCP++: Applying an efficient implementation method for fail-stop cryptographic protocols"*](#)
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125. [*"Automated Recovery in a Secure Bootstrap Process"*](#)
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Angelos D. Keromytis, John Ioannidis, and Jonathan M. Smith. In Proceedings of the *IEEE Global Internet (GlobeCom)*, pp. 1948 - 1952. November 1997, Phoenix, AZ.

Books/Book Chapters

1. *"Practical Software Diversification Using In-Place Code Randomization"*
Vasilis Pappas, Michalis Polychronakis, and **Angelos D. Keromytis**. In *"Moving Target Defense II: Application of Game Theory and Adversarial Modeling"*, Sushil Jajodia, Anup K. Ghosh, V. S. Subrahmanian, Vipin Swarup, Cliff Wang, and X. Sean Wang (editors), pp. 169 - 196. Springer, 2012.
2. *Proceedings of the 2012 Financial Cryptography and Data Security (FC) Conference*
Angelos D. Keromytis (editor). Lecture Notes in Computer Science (LNCS) 7397. Springer, 2012.
3. *"Voice over IP Security: A Comprehensive Survey of Vulnerabilities and Academic Research"*
Angelos D. Keromytis. Springer Briefs, ISBN 978-1-4419-9865-1, April 2011.
4. *"Buffer Overflow Attacks"*
Angelos D. Keromytis. In *Encyclopedia of Cryptography and Security, 2nd Edition*, pp. 174 - 177. Springer, 2011.
5. *"Network Bandwidth Denial of Service (DoS)"*
Angelos D. Keromytis. In *Encyclopedia of Cryptography and Security, 2nd Edition*, pp. 836 - 838. Springer, 2011.
6. *"Monitoring Technologies for Mitigating Insider Threats"*
Brian M. Bowen, Malek Ben Salem, **Angelos D. Keromytis**, and Salvatore J. Stolfo. In *Insider Threats in Cyber Security and Beyond*, Matt Bishop, Dieter Gollman, Jeffrey Hunker, and Christian Probst (editors), pp. 197 - 218. Springer, 2010.
7. *"Voice over IP: Risks, Threats, and Vulnerabilities"*
Angelos D. Keromytis. In *Cyber Infrastructure Security*, Tarek Saadawi and Louis Jordan (editors). Strategic Study Institute (SSI), 2010.
8. *Proceedings of the 2008 New Security Paradigms Workshop (NSPW)*
Angelos D. Keromytis, Anil Somayaji, and M. Hossain Heydari (editors).
9. *Proceedings of the 6th International Conference on Applied Cryptography and Network Security (ACNS)*
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10. *"Insider Attack and Cyber Security: Beyond the Hacker"*
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11. *Proceedings of the 2007 New Security Paradigms Workshop (NSPW)*
Kostantin Beznosov (Editor), **Angelos D. Keromytis** (editor), and M. Hossain Heydari (Editor).
12. *"The Case for Self-Healing Software"*
Angelos D. Keromytis. In *Aspects of Network and Information Security: Proceedings NATO Advanced Studies Institute (ASI) on Network Security and Intrusion Detection, held in Nork, Yerevan, Armenia, October 2006*, E. Haroutunian, E. Kranakis, and E. Shahbazian (editors). IOS Press, 2007. (By invitation, as part of the NATO ASI on Network Security, October 2005.)
13. *"Designing Firewalls: A Survey"*
Angelos D. Keromytis and Vassilis Prevelakis. In *Network Security: Current Status and Future Directions*, Christos Douligieris and Dimitrios N. Serpanos (editors), pp. 33 - 49. Wiley - IEEE Press, April 2007.
14. *"Composite Hybrid Techniques for Defending against Targeted Attacks"*
Stelios Sidiroglou and **Angelos D. Keromytis**. In *Malware Detection*, vol. 27 of Advances in Information Security Series, Mihai Christodorescu, Somesh Jha, Douglas Maughan, Dawn Song, and Cliff Wang (editors). Springer, October 2006. (By invitation, as part of the ARO/DHS 2005 Workshop on Malware Detection.)
15. *"Trusted computing platforms and secure Operating Systems"*
Angelos D. Keromytis. In *Phishing and Countermeasures: Understanding the Increasing Problem of Electronic Identity Theft*, Markus Jakobsson and Steven Myers (editors), pp. 387 - 405. Wiley, 2006.
16. *"CryptoGraphics: Exploiting Graphics Cards for Security"*
Debra Cook and **Angelos D. Keromytis**. Advances in Information Security Series, ISBN 0-387-29015-X. Springer, 2006.
17. *Proceedings of the 3rd Workshop on Rapid Malcode (WORM)*
Angelos D. Keromytis (editor). ACM Press, 2005.

18. *Proceedings of the 3rd International Conference on Applied Cryptography and Network Security (ACNS)*
John Ioannidis, **Angelos D. Keromytis**, and Moti Yung (editors). Lecture Notes in Computer Science (LNCS) 3531. Springer, 2005.
19. *"Distributed Trust"*
John Ioannidis and **Angelos D. Keromytis**. In *Practical Handbook of Internet Computing*, Munindar Singh (editor), pp. 47/1 - 47/16. CRC Press, 2004.
20. *"Experiences Enhancing Open Source Security in the POSSE Project"*
Jonathan M. Smith, Michael B. Greenwald, Sotiris Ioannidis, **Angelos D. Keromytis**, Ben Laurie, Douglas Maughan, Dale Rahn, and Jason L. Wright. In *Free/Open Source Software Development*, Stefan Koch (editor), pp. 242 - 257. Idea Group Publishing, 2004. Also re-published in *Global Information Technologies: Concepts, Methodologies, Tools, and Applications*, Felix B. Tan (editor), pp. 1587 - 1598. Idea Group Publishing, 2007.
21. *"STRONGMAN: A Scalable Solution to Trust Management in Networks"*
Angelos D. Keromytis. Ph.D. Thesis, University of Pennsylvania, November 2001.
22. *"The Role of Trust Management in Distributed Systems Security"*
Matt Blaze, Joan Feigenbaum, John Ioannidis, and **Angelos D. Keromytis**. In *Secure Internet Programming: Issues in Distributed and Mobile Object Systems*, Jan Vitek and Christian Jensen (editors), pp. 185 - 210. Springer-Verlag Lecture Notes in Computer Science State-of-the-Art series, 1999.
23. *"Security in Active Networks"*
D. Scott Alexander, William A. Arbaugh, **Angelos D. Keromytis**, and Jonathan M. Smith. In *Secure Internet Programming: Issues in Distributed and Mobile Object Systems*, Jan Vitek and Christian Jensen (editors), pp. 433 - 451. Springer-Verlag Lecture Notes in Computer Science State-of-the-Art series, 1999.

Workshops

1. *"Computational Decoys for Cloud Security"*
George Kontaxis, Michalis Polychronakis, and **Angelos D. Keromytis**. In *Proceedings of the ARO Workshop on Cloud Security*. March 2013, Fairfax, VA.
2. *"Exploiting Split Browsers for Efficiently Protecting User Data"*
Angelika Zavou, Elias Athanasopoulos, Georgios Portokalidis, and **Angelos D. Keromytis**. In *Proceedings of the ACM Cloud Computing Security Workshop (CCSW)*, pp. 37 - 42. October 2012, Raleigh, NC.
3. *"The MEERKATS Cloud Security Architecture"*
Angelos D. Keromytis, Roxana Geambasu, Simha Sethumadhavan, Salvatore J. Stolfo, Junfeng Yang, Azzedine Benameur, Marc Dacier, Matthew Elder, Darrell Kienzle, and Angelos Stavrou. In *Proceedings of the 3rd International Workshop on Security and Privacy in Cloud Computing (ICDCS-SPCC)*, pp. 446 - 450. June 2012, Macao, China.
4. *"Fog Computing: Mitigating Insider Data Theft Attacks in the Cloud"*
Salvatore J. Stolfo, Malek Ben Salem, and **Angelos D. Keromytis**. In *Proceedings of the Workshop on Research for Insider Threat (WRIT)*. May 2012, San Francisco, CA.
5. *"REASSURE: A Self-contained Mechanism for Healing Software Using Rescue Points"*
Georgios Portokalidis and **Angelos D. Keromytis**. In *Proceedings of the 6th International Workshop on Security (IWSEC)*, pp. 16 - 32. November 2011, Tokyo, Japan. **(Best Paper Award)**
6. *"Taint-Exchange: a Generic System for Cross-process and Cross-host Taint Tracking"*
Angeliki Zavou, Georgios Portokalidis, and **Angelos D. Keromytis**. In *Proceedings of the 6th International Workshop on Security (IWSEC)*, pp. 113 - 128. November 2011, Tokyo, Japan.
7. *"The MINESTRONE Architecture: Combining Static and Dynamic Analysis Techniques for Software Security"*
Angelos D. Keromytis, Salvatore J. Stolfo, Junfeng Yang, Angelos Stavrou, Anup Ghosh, Dawson Engler, Marc Dacier, Matthew Elder, and Darrell Kienzle. In *Proceedings of the 1st Workshop on Systems Security (SysSec)*. July 2011, Amsterdam, Netherlands.
8. *"The SPARCHS Project: Hardware Support for Software Security"*
Simha Sethumadhavan, Salvatore J. Stolfo, David August, **Angelos D. Keromytis**, and Junfeng Yang. In *Proceedings of the 1st Workshop on Systems Security (SysSec)*. July 2011, Amsterdam, Netherlands.

9. *"Towards a Forensic Analysis for Multimedia Communication Services"*
Dimitris Geneiatakis and **Angelos D. Keromytis**. In Proceedings of the 7th International Symposium on Frontiers in Networking with Applications (FINA), pp. 424 - 429. March 2011, Biopolis, Singapore.
10. *"Security Research with Human Subjects: Informed Consent, Risk, and Benefits"*
Maritza Johnson, Steven M. Bellovin, and **Angelos D. Keromytis**. In Proceedings of the 2nd Workshop on Ethics in Computer Security Research (WECSR). March 2011, Saint Lucia.
11. *"Global ISR: Toward a Comprehensive Defense Against Unauthorized Code Execution"*
Georgios Portokalidis and **Angelos D. Keromytis**. In Proceedings of the ARO Workshop on Moving Target Defense, pp. 49 - 76. October 2010, Fairfax, VA.
12. *"Securing MANET Multicast Using DIPLOMA"*
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Exhibit 9



Stelios Sidiroglou-Douskos

Research Scientist

[MIT](#), [Computer Science and Artificial Intelligence Laboratory](#)

Ph.D. 2008, [Columbia University](#)

M.Phil. 2006, [Columbia University](#)

M.Sc. 2003, [Columbia University](#)

The Stata Center, Building 32-G728

32 Vassar St, Cambridge, MA 02139

stelios **at** csail dot mit dot edu

About

Stelios is a research scientist in the [Computer Science and Artificial Intelligence Laboratory](#) at [MIT](#) in Cambridge, MA. He is also a member of the Center for Reliable Software [CRS](#). His technical interests are in systems security, software reliability, software engineering and "unsound" computation.

He is also a co-founder of [Locu, Inc.](#) ([Acquired by GoDaddy](#))

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News

Sound Input Filter Generation for Integer Overflow Errors accepted at POPL 2014

- [POPL Accepted Papers](#)

Locu acquired by GoDaddy:

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Press on our Secure Cloud Computing Systems work:

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Some press on our software self-healing work:

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Some press on our Code Perforation work:

- [MIT News](#)

Research

My research interests span the areas of systems, security and programming languages. In particular, I investigate ways in which software can be pushed to operate beyond its prescribed use to provide innovative solutions such as self-healing software, collaborative application communities and energy-conscious computing. The motivation for this research is that today's software systems are exploding in size and complexity, resulting in security vulnerabilities and pathological performance characteristics. Fortunately, complexity has a significant fringe benefit that can be used to combat these problems: software elasticity or the ability of a program to operate outside its intended use. Software elasticity is founded on the observation that as software grows in complexity so does its ability to tolerate unexpected events such as induced errors or reduced accuracy. In previous work, I used the concept of software elasticity to develop systems that can automatically heal themselves from a variety of faults. Recently, I have used software elasticity to create systems that can dynamically trade off accuracy for reliability, performance and power. In the future, the focus of my research will be on solving traditionally hard problems by challenging conventional assumptions.

Secure Cloud Computing Systems

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3rd

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Previous Columbia Technology Ventures, Tom's Hardware Guide, City of San José

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3rd

Executive VP and Chief Product Officer at Informatica
San Francisco Bay Area | Information Technology and Services

Previous Symantec, VeriSign, Logictier

Education Massachusetts Institute of Technology

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**Central District of
California**

George H. King, Chief Judge

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Jurisdiction Map for the Central District of California

Court Locations

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[United States](#)

[Courthouse](#)

WESTERN DIVISION

Los Angeles

Edward R. Roybal
Federal Building and
United States
Courthouse

EASTERN DIVISION

Riverside

George E. Brown, Jr.
Federal Building and
United States
Courthouse

SOUTHERN DIVISION

Santa Ana

Ronald Reagan Federal
Building and United
States Courthouse

CENTRAL DISTRICT of California



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